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PRACTICAL TREATISE

ON

MIDWIFERY.

BY

M. CHAILLY,

DOCTOR OF MEDICINE, AND EX-CHIEF OF THE OBSTETRIC CLINIQUE OF THE FACULTY OF
PARIS, PROFESSOR OF MIDWIFERY, MEMBER OF THE SOCIETY OF MEDICAL
EMULATION, &c., &c., &c.

ILLUSTRATED WITH 216 WOODCUTS.

A WORK ADOPTED BY THE ROYAL COUNCIL OF PUBLIC INSTRUCTION.

TRANSLATED FROM THE FRENCH AND EDITED

BY

GUNNING S. BEDFORD, A.M., M.D.,

PROFESSOR OF MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN IN THE UNIVERSITY OF NEW-YORK.

EMORY UNIVERSITY

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FIFTH EDITION.

NEW YORK:

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1854.

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Chailly

UNIVERSITY OF FRANCE.

MINISTRY OF PUBLIC INSTRUCTION.

Paris, July 23d, 1842.

SIR:

The Royal Council of Public Instruction, at its session of the 12th inst., has examined the *Practical Treatise on Midwifery* which you have presented for the adoption of the University.

After the deliberation of the Royal Council, the use of this Treatise is authorized in the Faculties, in the schools of Medicine, and in the different courses instituted for the instruction of sage-femmes.

Receive, sir, the assurance of my distinguished consideration,
Peer of France, Minister of Public Instruction,

VILLEMAIN.

To Chailly, M.D., &c., &c., &c.

Entered, according to Act of Congress, in the year 1844, by

HARPER & BROTHERS,

In the Clerk's Office of the Southern District of New York.

EDITOR'S PREFACE.

I HAVE been induced to translate and edit Dr. Chailly's Treatise on Midwifery from a conviction of its great practical value. The encomiums which have been passed on this work by some of the best European journals, and the high character of Paul Dubois, whose instructions and experience it embodies, will, I am sure, secure for it a favourable reception on this side of the Atlantic. To all Americans who have visited the Parisian schools the name of Paul Dubois must be familiar; he is at this day the oracle of French midwifery, and Dr. Chailly has, in this treatise, presented the reader with a faithful and graphic view of the opinions of this accomplished obstetrician.

For myself personally, this work possesses more than ordinary interest; it mentions many cases of which I was an eyewitness during my residence in Paris, and it brings vividly to my recollection the valuable lessons which I received from my old masters, Desormeaux, Dubois, and Capuron. To the learned Desormeaux I owe much. It was through his kindness that I was permitted to enter the Maternité of Paris, and it was under his instruction that I was enabled, for nearly a period of two years, to avail myself of the inappreciable advantages of that extensive charity. To the venerable Capuron I am under the deepest obligations. He, too, was a kind and efficient preceptor. Nor can I ever forget the lessons of the eloquent and accomplished Dubois.

I therefore offer this treatise to the student, as combining all that is new and valuable in obstetric science; every topic is treated in detail, and bears the impress of the master's mind. I offer it as a faithful guide, embodying the learning and experience of a man who, by common consent, is acknowledged to be among the ablest of his cotemporaries.

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I like this book because it is practical. It purposely avoids all that is speculative, and adheres almost exclusively to bedside facts.

The students of the University know how much value I attach to this species of instruction; and with a view of affording them every possible facility for studying midwifery and the diseases of women and children practically, I established, on the organization of the University School of Medicine, an obstetric clinique devoted exclusively to the instruction of the members of my class. This clinique, now in the third winter of its existence, has enabled me to furnish gratuitously to the pupils of the University 740 cases of midwifery. The clinique is now so thoroughly organized that, in future, I shall have at my command an unlimited number of cases. In no other way can this important department be efficiently taught. It is essentially a practical branch, and to become acquainted with its details, the pupil must be introduced into the lying-in chamber.

I trust the translation of this treatise may prove acceptable to the reader. The notes I have added are marked as editorial.

G. S. BEDFORD.

New-York, March, 1844.

I have thought proper to preserve the measures recorded in the text, but that they may be intelligible to all, I subjoin the following table:

A millimetre	0·039 inch.
A centigramme	0·154 grain.
A gramme	1·540 grains.

G. S. B.

P R E F A C E.

THE practical part of midwifery is what I particularly endeavour to present in this work ; I have embodied in it as briefly as possible, but always in sufficient detail, all the precepts the excellence of which I have been enabled to test.

Devoted for fourteen years to the practice of the obstetric art, I am indebted to the kindness of M. P. Dubois for having at an early period been placed by him in a position altogether unexceptionable, at first as his pupil, afterward as his assistant in the city, and, finally, as his *chef de clinique* in the midwifery clinique of Paris ; and I have been enabled, in an excellent school, often in the city, sometimes at La Maternité, and every day at La Clinique, to verify by my own experience, and much more by that of my master, the great value of the rules I recommend.

The reader will not, then, be surprised to find the opinions of M. P. Dubois so exactly reproduced in this treatise, and likewise to see described here the simple and accurate manipulations, freed from that multitude of absurd rules, inculcated even by some of the latest writers, and which, for the most part, are impossible, and often dangerous when attempted to be reduced to practice.

I have also availed myself largely of the valuable works of Madame Lachapelle, Desormeaux, MM. Nægele, Velpeau, Stoltz, Moreau, &c. I have made, however, but few extracts, contenting myself to embody whatever I judged valuable, and permitting each to claim what he may be entitled to in this treatise ; reserving to myself, however, the choice of the rules, their practical application, and the order in which they should be arranged.

Most of the treatises on midwifery embrace discussions, the value of which I fully appreciate for those who wish merely to study this subject as a science, but which is of no value to the practitioner ; I have purposely omitted them, believing it to be much more profitable to enter as fully as possible on the consideration of purely practical points, which have either not been discussed at all, or, at least, not with that precision their importance claims.

The order which I have adopted in the arrangement of my subjects appears to me reasonable. The science of obstetrics is com-

posed of very dissimilar parts, some of which are divided, in order to accommodate them to others.

Thus, if we place the manipulations at the head of the chapter, we shall have the entire combination, but then it will become necessary to arrange pregnancy, labour, and the consequences of delivery, under as many subdivisions as there are rules; and to understand the indication in any given case, we will be compelled to search through numerous chapters for these isolated subjects, in order to arrive at just results.

The accoucheur will embrace in a coup d'œil all the details of a rule, but he will not find combined in the same article all the indications to be fulfilled in pregnancy, in each presentation of the fœtus, and in the treatment after delivery.

This course, pursued by my predecessors, except Madame Lachapelle, appears to me much less practicable; it moreover causes more numerous repetitions than the plan I have adopted. I have combined together the accidents and their treatment, first during pregnancy, then in each presentation of the fœtus, and, finally, during the puerperal period.

Thus, I have not divided the accidents into genera and species, into those which affect the mother, and those which affect the fœtus, and into those which require the employment of the hand, and blunt or cutting instruments; these divisions I consider arbitrary and useless; and they possess the great inconvenience of separating the methods and indications to be fulfilled from the accidents requiring their employment.

But I have treated pregnancy first in all its relations, and I have successively enumerated its possible complications, and the means of remedying them; then I have in the same manner considered delivery in the presentations of the vertex, face, pelvic extremity, and trunk; finally, I have pursued the same course for the puerperal period.

In this way, pregnancy, delivery subdivided into four presentations, and the puerperal period, form undivided parts, in which the accidents and treatment are grouped together; thus, the manipulations cease to be abstractions, and are appropriated to each specific case.

This practical arrangement will enable the accoucheur, at one glance, to embrace all the accidents which may occur either during pregnancy, in the various presentations of the fœtus, or during the puerperal period; he will, likewise, have the order in which the indications are to be fulfilled.

With this arrangement, I have been enabled to enter into numerous small details, which may appear somewhat tedious to the purely scientific, but which will be fully appreciated by the practical accoucheur, and which will be valued by the pupils themselves.

Finally, in order to avoid all obscurity, I have incorporated in the text a large number of woodcuts; and, in order to ensure their accuracy, I have designed them myself; I am convinced that they will add much to the value of the text.

The most methodical and accurate descriptions are of but little value when applied to rules composed of a multitude of details; but, on the contrary, they become perfectly plain and intelligible when, in studying them, we have before the eye a faithful representation of the position of parts, and of the route to be pursued either by the hand or by instruments.

In conclusion, I must return my grateful thanks to M. Honoré, my father-in-law, for his excellent counsel; to M. Rigaud, professor of the faculty of Strasbourg; and to Drs. Devilliers and Brasier for their kind co-operation.



INTRODUCTION.

WE understand by natural delivery the spontaneous and successful expulsion of the fœtus and its annexæ through the pelvis, in virtue of the action of certain organs ; and the restoration of the uterus and its appendages to their original condition.

The knowledge, therefore, of spontaneous delivery should necessarily precede the study of the manipulations required in difficult labour ; for it is on the rules pursued by nature, in determining the expulsion of the fœtus, that are based the methods which art is to follow in the extraction of the infant ; to this, however, there are some exceptions, which will be hereafter pointed out.

But, in order thoroughly to comprehend the phenomena of spontaneous expulsion, the accoucheur must have a perfect knowledge of the maternal organs which the fœtus is to traverse ; he should understand the different regions of the fœtus which may present at the orifice (presentations), and the relations of these parts with those of the mother (positions).

I shall, therefore, commence with the description of the pelvis and organs connected with parturition ; then with the fœtus ; and I shall afterward proceed to spontaneous delivery in the different presentations and positions of the fœtus, and terminate with the manipulations. I have adopted, as will be seen, a method which will not enjoin upon me the frequent repetitions so usual in the arrangement generally pursued ; and which will enable me to classify the obstacles and accidents which the accoucheur will be called upon to combat, in the order in which they may appear in the female, from the commencement to the termination of the labour. In this manner, the accoucheur will have a complete view of the spontaneous phenomena of expulsion in each presentation, and all the indications which each presentation may require in case of accident.

Everything connected with the practice of midwifery forming a part of this arrangement, I have not limited myself to the consideration of the accidents to which the female is exposed during labour, but I have also embodied in this treatise the diseases of pregnancy and the puerperal period ; and also the accidents which may compromise the safety of the infant, and the treatment it requires from the moment of conception until the first six weeks after birth.



A
PRACTICAL TREATISE
ON
MIDWIFERY.

PART I.

ORGANS OF THE FEMALE CONCERNED IN PARTURITION.

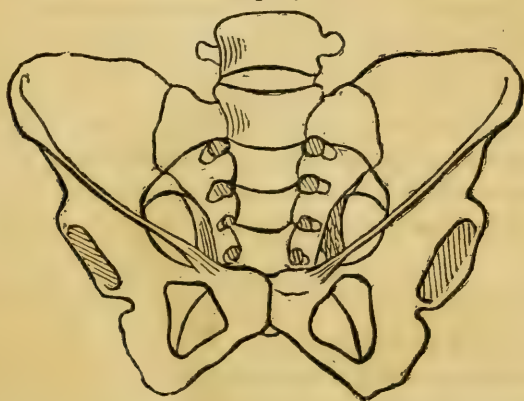
CHAPTER I.

PELVIS.

THE study of the pelvis becomes useful to the accoucheur only when its constituent parts are studied together ; I shall, therefore, briefly describe each of the bones composing it, and shall present a general view of it as a whole, and especially of its internal surface.

The pelvis, situated between the trunk which it supports, and the inferior extremities, is a crooked canal, composed of various bones, the shape and dimensions of which are modified by the soft parts. This canal is formed of four bones, the sacrum, coccyx, and the two ossa innominata, all of which are connected together by articulations and ligaments.

(Fig. 1.)



ART. I.—BONES OF THE PELVIS.

§ 1. *Sacrum.*

The sacrum is situated at the posterior part of the pelvis ; it is

triangular in shape, flattened from before backward, and divided into four surfaces, a base, and a summit.

The posterior surface presents at the median line the rudiments of the vertebral spinous processes, and beneath these there is a groove formed by the extremity of the sacral canal, and terminated laterally by two tubercles. On either side, we observe the four sacral foramina, which give passage to the sacral nerves; more outwardly, there is a series of eminences resembling the articulating processes of the vertebræ; and, lastly, two depressions, into which are inserted the sacro-iliac ligaments. The anterior surface is divided by four prominent lines, between which are found superficial grooves; on either side, the anterior openings for the anterior sacral nerves; more outwardly, a concave surface, which affords attachment to the pyriformis muscle, and which is grooved by transverse furrows, in which the sacral nerves are situated.

The two lateral surfaces, at their anterior and superior part, present a rough, semilunar face, which articulates with the os ilium; in the rest of their extent are rough prominences, to which are attached the sacro-iliac ligaments; and at the lower portion of the bone there is observed a thin, cutting border, into which are inserted the sacro-sciatic ligaments.

The base presents an articulating surface, on which rests the last lumbar vertebra.

The summit, looking downward, is united to the coccyx by a small oval facette.

§ 2. *Coccyx.*

The coccyx, composed of three or four small bones connected together by fibro-cartilages, is situated at the inferior portion of the sacrum. Its posterior surface is convex, and is separated from the integuments by the posterior sacro-coccygeal ligament, and affords attachment to the glutei maximi muscles.

Its anterior or pelvic surface is smooth, and covered by the anterior sacro-coccygeal ligament; on this surface are noticed transverse lines separating the bones.

The lateral edges receive the insertion of the anterior sacro-sciatic ligaments, and ischio-coccygeal muscles.

Its base is articulated to the sacrum, while its apex affords attachment to the levator-ani muscle.

§ 3. *Os Innominatum.*

The os innominatum is an irregular, broad bone, and, as it were, twisted in two different directions; it is narrow at its middle, and presents two surfaces and four borders.

The external surface is divided into two parts; the most posterior, called the external iliac fossa, presents a small, irregular surface, into which is inserted the gluteus maximus muscle; more anteriorly, the superior curved line offers a concave surface, into which is inserted the gluteus medius muscle. Immediately

beneath the inferior curved line is inserted the *gluteus minimus* muscle; the most anterior part of the external surface of this bone presents, above, the cotyloid cavity; below this, the triangular foramen thyroideum, giving attachment, at its circumference, to a fibrous membrane, with the exception of its upper part, through which pass the obturator nerves and vessels. On the outer side of this foramen there is a surface nearly plane, to which are attached the adductor muscles of the thigh, and the external obturator muscle; also a groove for the tendon of the obturator internus.

The internal or abdominal surface is formed above by the internal iliac fossa, posteriorly by an articular surface united to the sacrum, and prominent inequalities into which are inserted the sacro-iliac ligaments. This superior portion of the bone is separated from the inferior by a line, which forms part of the superior strait; below this line, there is a flat surface nearly triangular, which corresponds to the posterior part of the cotyloid cavity; it is covered by the obturator internus and levator ani muscles; besides this, there is the thyroid foramen.

The superior border, or iliac crest, is thick, convex, and of the shape of the letter S; it affords attachment externally to the *latissimus dorsi* and *obliquus externus* muscles, and also to the crural aponeurosis; internally to the *transversalis abdominis* and *quadratus lumborum*, and in its interstice to the *obliquus internus* muscle; it is bounded posteriorly by the posterior superior spinous process of the ilium, and in front by the anterior superior spinous process.

The inferior border articulates with that of the opposite side, and forms the pubic arch; the posterior border, very irregular, forms, by its union with the superior border, the posterior superior iliac spine, separated by the notches of the posterior inferior iliac spine; below is the great ischiatic notch; and, lastly, the tuberosity of the ischium.

The anterior border forms, by its union with the superior, the anterior superior spinous process, which is separated from the anterior inferior spinous process by the semilunar groove. A little lower down there is observed a smooth surface, over which pass the united tendons of the *psoas* and *iliac* muscles. Lastly, we observe the *linea ileo-pectinea* and pubic spine.

ART. II.—ARTICULATIONS OF THE PELVIS.

The articulations of the pelvis are five in number: 1. That which unites the two inferior borders of the *ossa innominata*, and which takes the name of *symphysis pubis*; the two sacro-iliac symphyses, which unite the *innominata* to the lateral portions of the sacrum; and, finally, the sacro-coccygeal symphysis.

During pregnancy, these articulations enlarge and become softened; and some authors have supposed that this softening is intended to favour parturition. But I have convinced myself, by numerous experiments made on the pelves of women recently delivered, that the fact is not so. The greatest effort will not add to

the capacity of the pelvis a millimetre. In order that this softening of the symphyses should facilitate the expulsion of the fœtus, it must be very marked, which, it is true, is sometimes the case, but then it constitutes a diseased condition of the female, and often renders progression impossible; but in the living woman this disposition of the articulations is never so manifest as to be perceived. Such, however, is not the fact with regard to certain inferior animals, among which this softening, without which parturition would often be impossible, is sometimes so distinct, that the bones appear lost in the midst of the soft parts; and if the traces of this condition are occasionally met with in the human female, it must be considered only as a mark of one of those general laws which rule in the organization of all animals.

§ 1. *Symphysis Pubis.*

This articulation is formed by the approximation of the two pubic facettes, which are covered by a cartilaginous layer, and which are almost entirely united by an inter-pubic fibro-cartilage, except posteriorly, where these surfaces touch each other in a small portion of their extent. The bones are maintained in these relations, anteriorly, by a thick fibrous plane; posteriorly, by very thin ligamentous fasciculi, which pass off from the periosteum; and inferiorly, by a ligament called the sub-pubic, of a triangular shape, which is formed by an expansion of the most inferior fibres of the inter-pubic ligament.

§ 2. *Sacro-iliac Symphyses.*

These symphyses result from the union of the semilunar facettes, which are found on the borders of the ossa innominata, and on those of the sacrum, where these facettes are covered by a very thick diarthrodial, corrugated cartilage. These articulations are strengthened, 1st, in front, by a slender ligament called the *anterior sacro-iliac*; and, behind, by numerous bands of yellow elastic fibres, which interlace with each other, directed from below upward, and from within outward, and which are termed the *posterior sacro-iliac* ligaments; 2d, by a small ligament called *superior sacro-iliac*, a very thick fibrous fasciculus, extending from the base of the sacrum to the os innominatum; 3d, by an *inferior sacro-iliac* ligament (the *vertical* of M. Cruveilhier), which passes from the border of the sacrum and great sacro-sciatic ligament to the posterior superior spine of the ilium; 4th, by the two sacro-sciatic ligaments, which convert the sciatic notches into a foramen, and complete the floor of the pelvis; these two ligaments are triangular, thin, flattened, and formed of fibres attached to the inferior half of the borders of the sacrum, and to the whole extent of the coccyx, dividing into two fasciculi; the first, formed by the posterior and superior fibres, is called the *great sacro-sciatic ligament*, and is inserted into the tuberosity of the ischium, after crossing the other fasciculus, composed of the anterior and inferior fibres; the second, which is the *small sacro-sciatic ligament*, is attached to the spine of the ischium.

§ 3. *Sacro-coccygeal Symphysis.*

The coccyx is united to the last bone of the sacrum by means of a fibro-cartilage, strengthened by anterior and posterior ligamentous fibres, which, stretching to all the pieces of this bone, unite them firmly to each other. The ossification of the fibro-cartilages which are interposed between the various portions of these bones does not take place until the female is somewhat advanced in age; this circumstance, which permits the coccyx to recede as it is pressed upon by the head of the fœtus at the time it is passing through the inferior strait, increases the length of the antero-posterior diameter of this strait.*

ART. III.—PELVIS IN GENERAL.

The pelvis is divided into the great or abdominal pelvis, and into the small pelvis, or cavity.

§ 1. *The Great or Abdominal Pelvis.*

The abdominal pelvis having a large excavation in front, which is closed up by the inferior part of the anterior abdominal walls, is destined to contain the product of conception during the latter period of its development; it is bounded laterally by the iliac fossæ; posteriorly, by the last two lumbar vertebræ. A circular line, called the superior strait, separates it from the small pelvis; this latter, in an obstetric point of view, is the only part of the pelvis which embodies any interest for the accoucheur, for it is through this por-

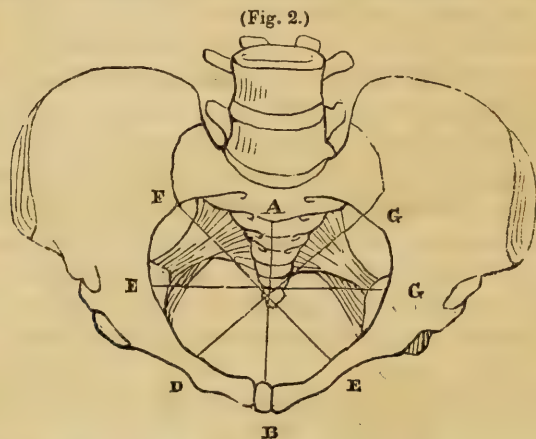
* The *sacro-coccygeal articulation* is sometimes the cause of serious difficulty in delivery. The complete ankylosis of this joint is, I think, comparatively rare; for if it be examined after death in women before the fiftieth year of age, it will be found merely *rigid*, and not *anchylosed*. Females who marry late in life, and who, consequently, labour under more or less rigidity of this articulation, as also of the external genitals, are frequently exposed to the most alarming danger, and if great care be not taken by the accoucheur, fatal consequences will certainly ensue to the child. Let us suppose, for example, that a woman has attained her thirtieth year before she marries: the parts not having been previously called upon to yield, are necessarily more or less resisting. But it must be remembered that in these cases, as a general rule, there is no difficulty experienced until the head has descended to the inferior strait. Now, in consequence of the rigidity of the coccyx, the unyielding character of the perineum and vulva, no progress is made in the delivery, notwithstanding the strong and continued expulsive effort of the uterus. The head and soft parts are pressed upon—the accoucheur, finding that the head is at the inferior strait, and that the uterus contracts with great force, believes that the labour will soon be terminated; he encourages the woman, and assures the attendants that the delivery will be speedily ended. Several hours pass, and there is no progress; the head is so pressed upon that the scalp becomes corrugated; there is engendered in the vagina excessive heat, and everything indicates severe and dangerous pressure on the head, giving just ground of apprehension that congestion of the brain may ensue. But this is not all: in consequence of the continued pressure on the soft parts of the mother, there is danger of inflammation resulting in sloughing, thus producing either a recto-vaginal or vesico-vaginal fistula. Timely and judicious interference in this case will protect the mother, and save the child; whereas delay, or an unreasonable dependence on nature, will as certainly lead to the destruction of the latter, and seriously compromise the comfort of the former. As soon as it is discovered that, in consequence of the rigidity of the soft parts and the unyielding nature of the sacro-coccygeal articulation, the farther progress of the delivery is arrested, and that the whole expulsive power of the womb is expended on the head of the infant without in any way accelerating the delivery, I would recommend to proceed at once to artificial delivery by the application of the forceps. It will, however, frequently be advisable to premise blood-letting, which sometimes has the happiest effects in relaxing the rigidity of the soft parts. Delay is certain to produce the death of the child. Act, therefore, promptly, but not rashly. In another part of this work I shall mention the details of a case which elucidate fully the necessity of this precept.—Ed

tion of the narrow canal that the foetus is to pass, when the phenomena of labour commence.

§ 2. *The Superior Strait.*

The superior strait, the form of which has been compared to the heart of a playing card, presents certain dimensions or diameters, a plane and an axis, all of which should be clearly understood. Its plane is directed from behind forward, and from above downward. This direction is much more marked in the child and female than in the adult and male. In infants just born it is such that the plane of the superior strait is parallel to the axis of the body. The direction of this plane, too, varies considerably in the standing position. M. Nægele thinks that the angle which the plane forms with a horizontal line is from 55 to 60°.

The diameters of this strait are four in number :



The antero-posterior (A B) diameter, which extends from the sacro-vertebral prominence to the summit of the symphysis pubis, measures four inches ; the two oblique diameters (C D, E F), which extend from the sacro-iliac symphyses to the ileo-pectineal eminence of the opposite side, measure four inches and a half ; the bis-iliac or transverse diameter (G F), which extends from the lower border of the two iliac fossæ, measures five inches. But it will be seen hereafter that these diameters are modified by the soft parts, which are found to line the pelvis.

§ 3. *Cavity, or Small Pelvis.*

The pelvic cavity is situated between the superior and inferior straits ; it is nearly cylindrical in form, becomes larger at its middle part, and is curved in front.

This cavity is divided into four regions :

The anterior region is concave transversely, and presents in its middle the posterior part of the articulation of the pubes ; on the right and left there is a flat surface, and we also observe the internal orifice of the sub-pubic opening, through which pass the external obturator vessels and nerves, the compression of which du-

ring the transmission of the foetal head frequently occasions cramps along the internal muscles of the thigh.

The posterior region, concave from above downward, is composed of the anterior surface of the sacrum and coccyx.

The lateral regions are divided into two portions: one is solid, and is formed by the posterior part of the colytoid cavity and the body of the ischiatic tuberosity; the other, flexible, is composed of the sacro-sciatic ligaments, which convert the ischiatic notches into foramina.

The inclined planes of the pelvic cavity have occupied a great deal of attention, and, until recently, they have been regarded as the cause of the movement of rotation, which the foetal head undergoes in passing through the pelvis. Two of these planes, formed by the anterior and lateral walls of the cavity, are charged, it is alleged, with bringing the occiput in front, while the other two planes, composed of the posterior and lateral walls of this canal, direct the occiput backward, as will be seen in the article on *Spontaneous Delivery*. This rotation is performed almost always below the sphere of action of these planes, when the perineum begins to distend, and frequently, also, in a direction inverse of that which should be imparted to it by these planes. The resistance of the soft parts is, according to M. Dubois, the sole cause of this rotation.

(Fig. 3.)



All the diameters of the cavity measure about four inches and a half. In front, the depth of the cavity is one inch and a half; on the sides, three inches and a half; and posteriorly, about four inches, if a straight line be drawn from the sacro-vertebral prominence to the summit of the coccyx; five inches and three lines, if the curvature of the sacrum be followed.

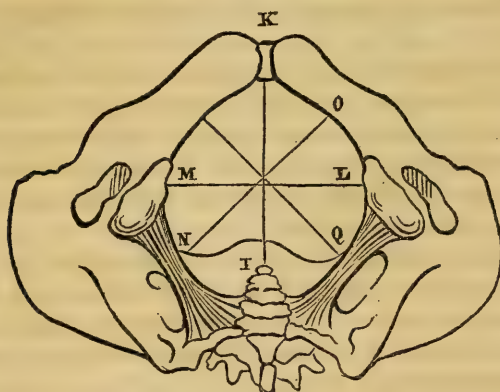
§ 4. *The Inferior Strait.*

The inferior strait, or inferior opening of the pelvic cavity, is very irregular in its form; it is composed of three open angles—the pubic arch, and the two ischiatic notches; and of three prominent angles—the two tuberosities of the ischium, and the coccyx. However, throwing out of view the coccyx, which is pushed backward during labour, this strait forms a perfect ovoid, elongated

from before backward. The plane of this strait is, according to M. Velpeau, at the moment of accouchement, on account of the regression of the coccyx, oblique from below upward, and from behind forward.

The diameters of this strait are also four in number:

(Fig. 4.)



The antero-posterior (I K), which extends from the point of the coccyx to the inferior portion of the symphysis pubis, measures four inches, but, owing to the repulsion of the coccyx, this diameter is increased several lines during parturition. The two oblique diameters (N O, P Q), which extend from the union of the descending branch of the pubes and ascending branch of the ischium to the middle of the great sacro-sciatic ligament, measure four inches, and may acquire a few lines in addition, in consequence of the partial yielding of the sacro-sciatic ligament during the passage of the child's head.

The transverse, or bis-ischiatric diameter (M L), extending from the tuberosity of the ischium to that of the other, measures four inches; this diameter is not increased, unless we admit the relaxation of the symphyses as necessary to parturition.

ART. IV.—CHANGES IN THE STRUCTURE OF THE PELVIS OCCASIONED BY THE SOFT PARTS.

It is especially in this point of view that it becomes indispensable to study the pelvis as a whole. The presence of the soft parts modifies the configuration and dimensions of the straits of the pelvis, and renders the curvature of this canal much more marked.

At the superior strait, the psoas (1) and iliacus internus muscles (2), together with the internal iliac arteries and veins, form on each side a soft border, on which the uterus rests; and this border protects the crural nerves against undue pressure. This result, however, is not always obtained, for some women, during the latter period of pregnancy, are much troubled with cramps and numbness in the inferior extremities.

The muscles and vessels on the sides, a slight layer of cellular tissue posteriorly, the bladder in front, and the thickness of the

uterine walls, all tend to curtail somewhat the diameters of this strait.

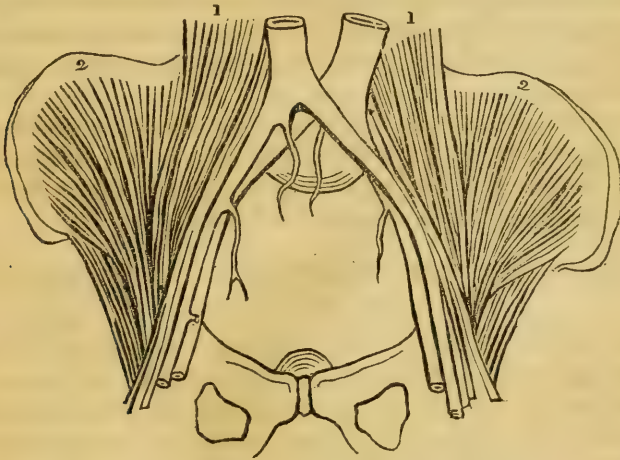
Thus, the antero-posterior diameter is a little less than four inches, and the oblique less than four inches and a half. They lose but little, it is true, at the anterior part; while the psoas muscles posteriorly diminish them more, though these muscles themselves are slightly pushed aside at the time the head is passing through the pelvis.

But of all the diameters, the transverse is the one which is the most changed; it is curtailed at both extremities; thus, instead of five inches, it is reduced to four inches. However, if the lower extremities are well flexed at the time of accouchement, the psoas muscles will be in a state of relaxation, and this diameter, consequently, would be less diminished.

The cavity is also modified in its form and extent by the internal obturator and pyramidal muscles, the rectum, the posterior portion of the urethra, and a layer of cellular tissue sometimes quite abundant, so that its diameters measure, instead of four inches and a half, only four inches and a quarter.

The inferior or perineal strait undergoes very slight alteration. The bis-ischiatic diameter preserves its dimensions of four inches; the antero-posterior loses very triflingly by the soft parts under the pubic arch. The same thing obtains with regard to the oblique diameters; but this strait, more than any other part, is modified in its form by the floor of the pelvis.

(Fig. 5.)



§ 1. *Floor of the Pelvis.*

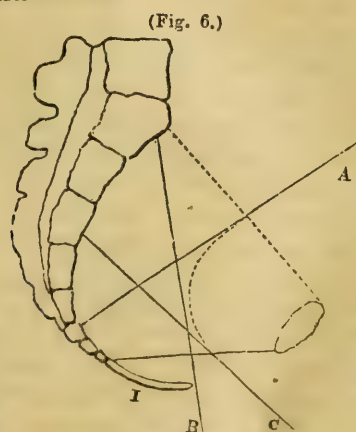
It is of great importance to the accoucheur to understand thoroughly what is meant by the floor of the pelvis; for it is almost always on this part that the different movements of the fœtus are executed; and on its greater or less suppleness and extensibility will very materially depend the rapid or protracted expulsion of the child. Situated at the most inferior portion of the perineal strait, it is composed of the levator-ani and ischio-coccygeal muscles, which constitute the superior plane, and which is concave

above; the sphincter-ani, transversalis perinei, ischio-cavernosus, and sphincter vulvæ muscles, and the aponeuroses, which are less resisting in the female than in the male, compose the inferior plane. The pubic vessels and nerves, a thin layer of cellular tissue together with the integuments, complete this floor. The space included between the anterior part of the floor (the anterior commissure of the perineum) and the lower portion of the symphysis pubis constitutes the vulva. The anterior wall of the cavity remains, therefore, the same, while the posterior wall is increased by the entire length of the perineum. Thus the pelvis represents a crooked canal with two openings, the superior strait and vulva, the planes of which are nearly perpendicular. The curvature of this canal, the resistance of the perineum and vulva, are so many obstacles which nature opposes in the female to the too rapid delivery of the fœtus; a wise precaution, without which both mother and child would be exposed to serious evils, such as the falling of the fœtus upon the ground, inversion of the womb, inertia of this organ, and, consequently, hemorrhage. In early childhood, and in the Africans and Bochimans, the curvature of the canal is much less marked; and this diminution of curvature is more sensible as we leave the human subject and descend in the animal scale; so that it may be truly affirmed that the facility of parturition is in a direct ratio with the simplicity of organization.

§ 2. *Axes of the Pelvis.*

Now that we understand the structure of the pelvis in its whole, it is proper that we should study the direction which the fœtus pursues in passing through this crooked canal; that is, the direction of the different axes of the two straits. They are three in number: the axis of the superior strait, inferior strait, and vulva.

The axis of the superior strait (A) is a line pursued by the fœtus in descending, and which is supposed to proceed from the umbilicus to the sacro-coccygeal articulation, passing through the centre of the superior strait.



I. Perineum.

The axis of the inferior strait (B) passes from the sacro-vertebral prominence through the inferior strait.

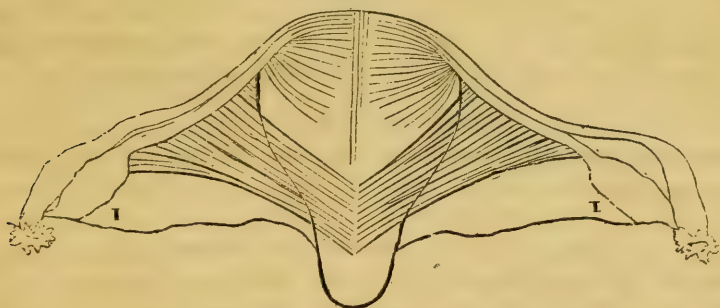
Finally, the axis of the vulva (C) passes through the centre of this orifice, and extends to the middle portion of the sacrum. These axes, considered in their aggregate, represent a curved line (A C), which the fœtus pursues in its expulsion. This line also indicates the direction to be given to the hand of the accoucheur, when introduced into the maternal organs with a view to reach the fœtus.

CHAPTER II.

ORGANS OF GENERATION.

THE genital apparatus of the female is composed of organs placed in the interior of the pelvis ; such as the ovaries, fallopian tubes, uterus, and vagina ; and of organs situated externally, the mons veneris, vulva, and perineum.

(Fig. 7.)



ART. I.—OVARIES.

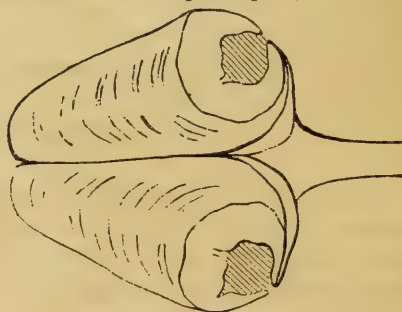
The ovaries (I I), both in the organic and functional scale, represent the testicles of the male. They are two in number, situated on each side of the uterus, in the posterior wing of the broad ligaments, near the fallopian tube ; they possess an ovoid form of the thickness of the finger, and become more developed at the period of puberty, and at the approach of the menses. They acquire a considerable size during pregnancy, and preserve it for a long time after delivery ; and, finally, become quite small in old age. They are covered almost entirely by the peritoneum, except at their inferior part, where they receive their vessels. They are composed of a fibrous shell, which is an expansion of the utero-ovarian ligament, and in which are distinguished interior filaments, a peculiar dense, fibrous tissue, of a reddish white, and from fifteen to twenty transparent vesicles, filled with a clear liquid, sometimes red or yellow, called the ova of Graaf, and which, according to certain authors, are nothing more than small cysts, the use of which is unknown. On the surface of the ovary, on the contrary, are observed veritable tubercles, of a yellowish brown, and

possessing a firm consistence, called *corpora lutea*; they are excavated on their surface. These tubercles present a small cicatrix, which is evidently occasioned by the separation of a fecundated ovum. M. P. Dubois has frequently exhibited these *corpora lutea* to his class, and in some instances, before cicatrization had taken place, a species of cell was seen, in which the ovule had undoubtedly been contained.

(Fig. 8.)
Entire Ovary.



(Fig. 9.)
Ovary laid open.



The first of these ovaries exhibits on its surface small ovules ready to burst; the second, which is laid open, represents the interior of the cell, and the opening through which the ovule has escaped. Care must be taken not to confound the *corpus luteum* with a peculiar disposition, similar in appearance, and which is sometimes met with in women who die during the menstrual period.

ART. II.—FALLOPIAN TUBES.

The uterine or fallopian tubes, of the size of a goose-quill, four inches in length, and situated in the thickness of the broad ligaments, are two channels which communicate with the cavity of the uterus, and pass off from the angles of this organ, and open into the peritoneum, where their fimbriated extremity floats free. Their internal cavity is narrow, especially at the lower part; their structure is simple. Externally, it is composed of a semi-muscular tissue; internally, it has a mucous coat, which, different in this respect from all other mucous surfaces, is continuous with a serous lining, the peritoneum. The use of the tube is to apply itself upon the surface of the ovary, by means of its fimbriated extremity, during fecundation; thus serving as a channel of transmission for the fecundating principle to the ovary, and for the fecundated ovum to the uterus.

ART. III.—THE UTERUS.

The uterus or matrix is the receiving organ, in which the fecundated ovum is developed from the moment it is deposited by the tube until its final expulsion.

The uterus (1) in a state of vacuity is situated in the pelvis, on the median line, between the bladder (2) and rectum (3), and be-

low the intestines; it is above the vagina, and is sustained on either side by the broad ligaments. Its dimensions after puberty are, for its vertical diameter, from two and a half to three inches; the transverse diameter at the fundus from fifteen to eighteen lines, and at the neck seven lines. It measures about six lines in thickness, while its walls do not measure more than three lines. It is of a firm consistence, and its direction is parallel to the axis of the superior strait.

(Fig. 10.)



Viewed externally, the uterus is pyriform in shape, flattened slightly from before backward, with its base above and its summit below. Its largest portion is called the body, while the inferior and narrowest portion receives the name of neck.

The external surface of the uterus presents, 1st. An anterior surface, covered by the peritoneum in its two superior thirds, and which in its inferior third is in contact with the base of the bladder. 2d. A posterior surface, covered in its whole extent by the peritoneum, as may be seen in the diagram; the posterior cul-de-sac of the peritoneum, which separates the uterus from the rectum, is deeper than the anterior cul-de-sac, which is found between the uterus and upper portion of the bladder. 3d. A base covered by the peritoneum. 4th. And, lastly, a summit, or cervix uteri.

§ 1. *Cervix Uteri.*

The neck of the womb exhibits very remarkable differences in the female, according as she may have borne children or not; and it is important to examine it in these two aspects.

In the woman who has never brought forth children, the vaginal neck is pointed, somewhat enlarged at its middle portion, and in length measures from an inch and a half to two inches; in thickness it is about eight lines, while in width it measures nine lines. It is, as it were, constricted by a groove deeper posteriorly than in front, formed by the mucous membrane of the vagina, which is reflected on the neck at the point of junction between its superior third with the two inferior thirds. The inferior portion of the cervix, or *os tincae*, is divided into two lips by a transverse slit, which constitutes its external orifice. This slit, in the young virgin, is scarcely perceptible (o). M. Ant. Dubois has compa-

red, very justly, the sensation imparted to the finger in touching it to what is experienced in pressing against the extremity of the nose. The anterior lip (I) is thicker and slightly more elongated than the posterior; and this elongation will be more sensible to the touch as the fundus is more inclined forward; the neck, in this case, being directed backward, the anterior lip is lower down, and appears much longer. This direction of the neck is, indeed, most usually observed, the axis of the uterus being nearly parallel to the axis of the superior strait, which terminates at the sacro-coccygeal articulation. (See fig. 10.)

(Fig. 11.)



(Fig. 12.)



That portion of the cervix (see fig. 14) (I) comprised between the insertion of the vagina and the body of the uterus constitutes about the third of the whole length of the neck; its cavity is continuous below with the vaginal portion, and opens above into the uterus, and is endowed with great power of retraction during pregnancy. This part is termed the internal orifice (o).

It is difficult to assign any exact form and dimensions to the cervix uteri of a woman who has borne children; often it is a shapeless and nipple-like body, which occupies the upper portion of the vagina, with an orifice more or less large and irregular; this body is shorter in proportion to the number of children the female may have brought forth. Sometimes it happens that the neck makes but a very slight projection into the vagina, and the only evidence of it which the accoucheur recognises are two tubercles situated around the orifice, which occupies the summit of the vagina. The inferior orifice is more or less open; in general, the apex of the finger can be introduced into it. The two commissures of this transverse slit are more or less lacerated, especially the left. These

(Fig. 13.)



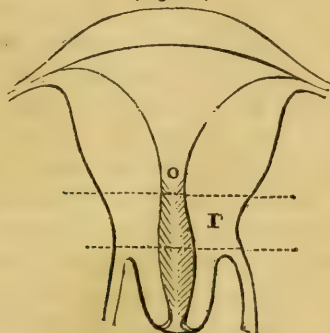
fissures, more or less numerous and more or less deep, are the cic-

atrices resulting from the lacerations made by the passage of the fœtus during labour; they are most usually found on the left side, where they are also deeper, in consequence of the greater frequency of the right obliquity of the uterus. The whole force of uterine contraction is ordinarily directed from right to left and from above downward; the fœtus is expelled in the direction of the left commissure of the neck, which, consequently, is called upon to sustain the force of these efforts. These fissures are very rarely observed in the middle portion of the lips. I have, however, occasionally remarked these cicatrices so numerous as entirely to encircle the neck.

§ 2. *Cavity of the Uterus.*

The cavity of the body of the uterus, viewed in front, presents the form of a triangle flattened from before backward; while viewed in profile, it has the appearance of a fissure, in consequence of the contiguity of its walls. It has three angles, two of which are superior, in which are situated the orifices, scarcely visible, however, of the fallopian tubes; the other angle is inferior, called the *os internum* (o), which is the point of communication between this cavity and that of the cervix. The cavity of the cervix is narrow and cylindrical, and presents a peculiar appearance, called the *arbor vitæ*; we also observe a number of follicles, the pretended ova of Naboth, but which, in reality, are nothing more than mucous cryptæ, obliterated at their orifice. This disposition is much more manifest after accouchement. (See fig. 16.)

(Fig. 14.)



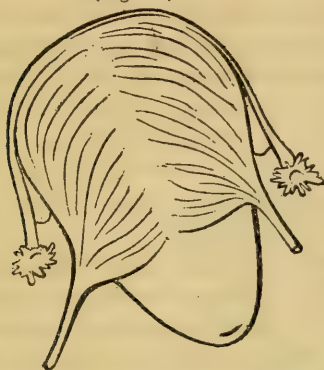
§ 3. *Structure of the Uterus.*

The dissection of the uterus, from without inward, or in the order of superposition, shows, 1st. A portion of the peritoneum, which envelops it almost entirely except in the inferior fourth of its anterior surface, in its lateral borders, and in the vaginal portion of its neck. On the sides, this membrane forms two duplications, the broad ligaments. The anterior and posterior folds of these ligaments, applied the one against the other, contain the uterine and ovarian vessels and nerves, together with some muscular fasciculi. Their superior border is divided into three folds or wings, containing the

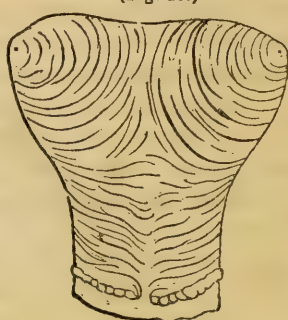
round ligament, fallopian tube, and ovary. Posteriorly and in front of the uterus there are likewise two small falciform duplications, which Madame Boivin has termed the anterior and posterior ligaments of the womb. 2d. Beneath the peritoneum is the proper tissue of the uterus; it is grayish, dense, resisting, and crepitant under the scalpel, especially at the neck; in a state of vacuity it exhibits a fibril appearance, and a muscular one during pregnancy. It is, therefore, in women who have been recently delivered that we should examine the proper tissue of the uterus; for at that time it can be distinguished without difficulty, and even the direction of its muscular fibres recognised. We observe, 1st, in the body of the organ a superficial layer composed of a vertical fasciculus extending upon the two surfaces; then, descending and ascending oblique fibres, directed towards the appendages of the uterus; a deep-seated layer, more marked, resulting from the union of the circular fibres in the form of a cone, which are prolonged by the fallopian tubes. At the neck, the muscular fibres are almost entirely circular.

The interior of the womb is lined by a mucous membrane, the presence of which, it is true, cannot be demonstrated by the scalpel; but analogy, comparative anatomy, and its pathological condition, necessarily force us to admit its existence.

(Fig. 15.)



(Fig. 16.)



The uterus receives the uterine arteries coming from the hypogastric and ovarian arteries; it supplies veins which, being developed in pregnancy, appear, when cut, like the hepatic veins in transverse incisions of the liver; that is, they present simply their peculiar coat, and adhere to the tissue of the organ. The lymphatic vessels are abundant, especially on the surface. They go to the pelvic and lumbar ganglia, and communicate with those of the appendages. The nerves are supplied by the cauda equina and the great sympathetic.

ART. IV.—THE VAGINA.

This canal is membranous in the whole of its extent; it commences at the junction of the superior third with the two inferior thirds of the neck of the uterus, which it surrounds, forming a circu-

lar groove, the depth of which is in a direct ratio with the prominence of the neck itself. This groove, as I have said when speaking of the neck, is deeper posteriorly than anteriorly. The largest diameter of the vagina is at its superior part, and this is very remarkable in women who have borne many children. The vagina descends towards the vulva, having behind it the rectum, from which it is separated in its superior fifth by the posterior cul-de-sac of the peritoneum, while in the four inferior fifths its relations with the intestine are almost immediate; and intervening between the rectum and vagina is a layer of cellular tissue, which M. Cruveilhier has named *dartoid*.* In front, and a little above, is the bladder, which is united to the vagina by compact filamentous cellular tissue. This union is so intimate that, in the formation of vesico-vaginal fistulæ, urinary infiltration is never observed between the corresponding walls of these cavities. There is a great difference in the length of the anterior and posterior wall of the vagina, the posterior being one third longer. The direction of this canal is the same as that of the axes of the inferior strait and vulva combined.

The anterior extremity of the vagina is sensibly narrowed; this opening is generally provided with a mucous fold more or less prominent, and of a semi-lunar form, sometimes constituting a species of diaphragm, presenting superiorly an orifice, and sometimes completely closing the pelvis so as to oppose the flow of the menses. This fold or duplicature is called the hymen; occasionally, however, it is so small as scarcely to exhibit the slightest trace. It has been pretended that after defloration, the remains of the hymen form the *carunculæ myrtiformes*; but M. Ph. Rigaud is convinced that these *carunculæ* do not result from the laceration of the hymen, but that they are mucous folds existing constantly behind this membrane.

Exteriorly, the vagina affords insertion at its lateral and superior portions to the broad ligaments. The internal surface does not present any very determinate form in its ordinary state, for the sides of the canal are in contact, except above, where the neck of the uterus keeps them separated. The anterior wall is crowded downward, and is seen at the vulva; on it is observed a median line much more prominent than on the posterior wall, and from each side of which pass off transverse folds, more numerous and conspicuous as they approach the orifice of the vulva.

The mucous membrane, which lines the vagina, is of a reddish or simply rosy colour, and is covered with a very distinct epithelium; this latter, however, does not extend farther than the lips of the womb, for the mucous surface of this cavity is deprived of the epithelium.

* It would, perhaps, be more accurate to divide the posterior surface of the vagina into five fifths; the three middle fifths of which are in contact with the rectum, the superior fifth is floating and covered by peritoneum, while the inferior fifth is separated from the rectum by the interposition of the perineum.—ED.

ART. V.—THE VULVA.

The vulva forms nearly a horizontal fissure, situated between the thighs, and directed from before backward, somewhat oblique, however, from above downward. Above the vulva is the mons veneris, which is composed of cellular tissue, fibrous filaments, and adipose matter, and, at puberty, it is covered with hair. From the inferior portion of the mons veneris there proceed two folds of integument, in the substance of which there is a layer of adipose and cellular tissue, the internal surface of which is well supplied with bloodvessels; these folds constitute the labia majora. The labia majora are thick, broad, and prominent at their anterior and middle portion, become thinner posteriorly, and unite by a membranous commissure of a crescent form, called the fourchette; between this latter and the hymen is a small concave space, termed the fossa navicularis.

Between the labia majora are situated the labia minora or nymphæ, mucous duplications, bounding on either side a triangular surface, the vestibulum, of which we shall speak directly. Broader at their central portion, they become smaller as they proceed, and lose themselves insensibly about the middle of the internal surface of the labia majora. In front, each of the nymphæ bifurcates, the superior branch of the bifurcation passing over to that of the opposite side in order to reflect on the clitoris, and furnish it a sheath or prepuce incomplete inferiorly. The inferior branch of the bifurcation joins its fellow and terminates at the inferior part of the clitoris. In the substance of the nymphæ there are numerous sebaceous follicles, which secrete in abundance a thick, yellowish, and odorous fluid.*

The vestibulum is that triangular space bounded laterally by the nymphæ, and placed above and in front of the orifice of the vagina. At its superior or anterior angle is found the clitoris; while at its base or posterior angle, a little below the clitoris, there is a small flat tubercle, on the median line, at which is observed the outer opening of the female urethra. The urethra lies on the anterior wall of the vagina. It measures from an inch to an inch and a half in length; it is wide, conical, and very slightly curved; it occasionally is considerably dilated. Flamand cites an instance in which he could introduce the finger.†

* *Sebaceous Follicles*.—These follicles, found so abundantly on the nymphæ, secrete, in certain morbid conditions of the system, and especially in women inattentive to personal cleanliness, an acrid, irritating fluid. It is possible that, if sexual intercourse be had under these circumstances, this fluid may produce in the urethra of the male an irritation which will give rise to most of the symptoms of an ordinary *urethritis* or *clap*. I have on several occasions been consulted in similar cases, and it requires all the tact and discretion of the accoucheur to be well guarded in his opinion. If he were thoughtlessly to pronounce this irritation a veritable clap, he might inflict a serious wound on the domestic happiness of his patient, and entail unmerited disgrace on a family whom it was his duty to protect against suspicion. In women of a cancerous or scrofulous diathesis the secretion from these follicles is particularly irritating.—Eo.

† *Female Urethra*.—The student should be perfectly familiar with the position and direction of the urethra, for it often becomes necessary to introduce the catheter, and I know of no situation more embarrassing for a medical man to be placed in than to attempt this operation

ART. VI.—PERINEUM.

The perineum is all that space comprised between the anus and the inferior commissure of the vulva. Its length is from an inch to an inch and a half; but it is very readily distended, and may, during the passage of the head, be increased to three inches.

ART. VII.—APPENDAGES OF THE GENITAL APPARATUS OF THE FEMALE.

§ 1. *Mammary Glands.*

The mammary glands are sub-cutaneous, possessing a large quantity of adipose cellular tissue. A delicate light-red skin covers them towards their centre, and forms the areola, which is surmounted by an eminence more or less prominent, called the nipple. Of a delicate red colour in youth, the areola becomes dark with age, and during pregnancy. (See *Diagnosis of Pregnancy*.)

The structure of the mammæ is composed of a glandular tissue, under the form of a whitish, hard substance, lost in a cellulo-adipose bed. The mammary glands are divided into granulations, lobules, and lobes, and are separated by a cellular tissue, which is nearly fibrous. These anatomical characters are particularly well marked in women who may have died during lactation.

The mammæ receive several arteries from the thoracic, superior intercostal, and internal mammary arteries. The veins are deep-seated and superficial, and accompany the arteries.

The lymphatic vessels of the mammæ pass to the ganglia of the axilla; some of the vessels go to the infra-sternal and intercostal ganglia. Among the nerves of the cervical region, there are some which appear to distribute themselves especially upon the gland, such, for example, as the branch of the thoracic and intercostals others, such as the sub-clavicular branch of the superior cervical plexus, supply the integuments.

§ 2. *Milk Tubes.*

The milk tubes, like all glandular ducts, proceed from the granulations, and ramify after the manner of the veins, so that there are

and fail. There are but two things to be kept in view in the introduction of the catheter: 1st. To find the *meatus urinarius*, or outer opening of the urethra; 2d. To remember how the direction of the urethra may be modified by pregnancy, or any other condition of the system causing distention of the uterus.

The rule which I recommend, it will be observed, is founded on the anatomical structure of the parts; and unless there should be malformation, it will always be an unerring guide for the performance of this very common and important operation. There is no necessity for uncovering the patient, and the catheter should be introduced without subjecting her to the slightest exposure. The index finger of either hand is to be well lubricated with oil or some mucilaginous substance; and it should be carried to the superior commissure of the vulva, or the point at which the labia majora commence. At this point will be found the *clitoris*; passing the finger immediately down from the clitoris the vestibulum will be felt, a small triangular space, bounded on either side by the nymphæ; at the inferior boundary of the vestibulum is the *meatus urinarius*; this point being attained, much of the difficulty will have been overcome; with the other hand the catheter is introduced, remembering, always, that in proportion as the uterus ascends in pregnancy, the urethra becomes straighter or more perpendicular.—ED.

about fifteen trunks all uniting towards the nipple. At the base of the nipple, and below the areola, they present a remarkable dilatation in the form of a sinus ; then they assume their ordinary calibre, agglomerate, and form the nipple, on the surface of which they open by as many orifices. Their structure is cellulo-mucous, the cellular portion becoming almost dartoid on a level with the nipple.

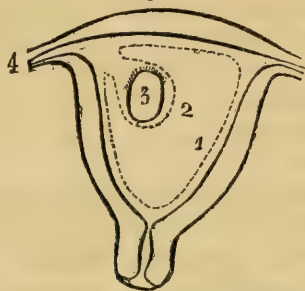
PART SECOND.

TITLE I.

CONCEPTION.

At the period of puberty the ovule is already formed in the ovary of the female. As soon as fecundation takes place, the vesicle which contains it breaks, and the ovule is seized by the fallopian tube ; it traverses this tube, and finally arrives in the uterus, pushing before it the membrana decidua, and there becomes developed, being surrounded by the decidua, the relations of which to the ovule are the same as the pleura to the lungs.

(Fig. 17.)



- 1. Uterine caduca.
- 2. Caduca reflexa.

- 3. Ovule.
- 4. Orifice of the fallopian tube, through which the ovule has passed.

This is the only positive knowledge we possess with regard to this interesting point. To endeavour to discover how the ovule is fecundated, and in what way this fecundation results in the formation of a new being, would be to attempt to penetrate a mystery which the most ingenious theories have not been enabled to clear up, and which will probably always remain impenetrable to human observation. For more ample details which do not comport with a practical work, I refer the reader to authors who have written more particularly on this subject.*

* Haller, Prévost and Dumas, Velpeau, Raspail, Dutrochet.

TITLE II.

PREGNANCY.

Immediately after conception commences the development of the fœtus, or pregnancy, which terminates by delivery 270 days or nine months after impregnation.

Pregnancy is *simple* when the uterus contains one fœtus; it is *compound* when several fœtuses are present; and *complicated* when a tumour is developed at the same time with the fœtus; finally, it is *abnormal* when the fœtus is developed without the uterine cavity (extra-uterine pregnancy).

CHAPTER I.

NORMAL PREGNANCY.

ART. I.—CHANGES IN THE UTERUS AND FŒTUS.—DIAGNOSIS OF PREGNANCY.

THE numerous modifications which take place in the uterus and fœtus, from the moment of impregnation until the full period of utero-gestation, elicit in the economy numerous sympathies, which are brought to the observation of the accoucheur by certain signs, through the aid of which he is enabled to recognise the existence of pregnancy.

Some of these modifications may be perceived in the uterus, and constitute, by themselves, signs which lead to a correct diagnosis of pregnancy, and even to its precise period.

Certain changes of the uterus are manifested only by their effects, veritable sympathetic reactions, such as darkening of the areola, disturbance of the digestive and nervous systems, &c., the anatomical character of which cannot be detected during life; while other changes may be directly appreciated during pregnancy, and in the uterus itself, either mediately through the abdominal walls, or immediately by the vaginal touch (changes in the neck and body of the organ), &c.

It is the knowledge of these changes, and of the sympathies which they determine in the economy, that constitutes the diagnosis of pregnancy.

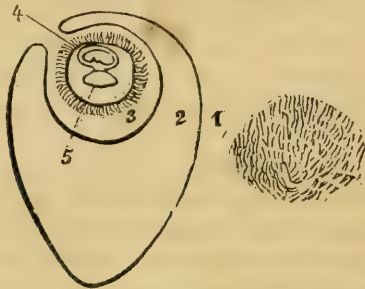
But as it frequently, in a medico-legal sense, becomes important to distinguish the age of premature ova, and also the exact period of pregnancy after death, it will be necessary to accompany the study of the changes of the uterus and fœtus, which can be ascertained directly, and which constitute the essential diagnosis of pregnancy, with an investigation of those modifications which, manifesting themselves only by their effects, cannot be recognised except after the

death of the female, or by an examination of the aborted ovum. With this view, at each period of pregnancy, I will examine the changes which characterize each period, whether they are appreciable or not during life; then I will pass to the diagnosis founded on the sensible signs furnished by these changes. This course will present a complete assemblage of facts, which will enable us to follow, month after month, the evolution of the new being, and of the organs destined to contain and expel it, and, at the same time, to ascertain, by these evolutions, whether pregnancy exists, and also its particular period.

§ 1. *Development of the Fœtus during the first three Months.*

It is not until about the twelfth day of pregnancy that the embryo can be distinctly seen; it then measures about three lines, and the entire ovum about six to seven lines. At first pyriform in shape, and curved forward, the superior extremity of the embryo is free, while the inferior is united to the membranes. All the parts which compose it are homogeneous, and a white filament, which is scarcely distinguishable, designates the spinal marrow. The mouth is the first organ of sense that is perceptible; it is visible from the twelfth to the twentieth day; frequently, too, at this period, the eyes may be distinguished.

(Fig. 18.) (Fig. 19.)
Ovule opened, twelfth day. Ovule entire, natural size.



1. Membrana decidua.
2. Membrana reflexa.
3. Chorion and its villosities.

4. Embryo and amnios.
5. Umbilical vesicle.

The *decidua* or *epichorion* is a secretion from the internal surface of the uterus; it is thick during the first periods of gestation, and is formed of two distinct portions, one of which lines the uterus, and has received the name of *caduca vera*; the other, which is united to the chorion, is called the *caduca reflexa*; these two surfaces of the *caduca* are separated by a space, which diminishes as pregnancy advances. Authors differ in reference to the structure of this membrane. M. Velpeau considers it an unorganized membrane, and has given it the name of *anhiste*.

The *chorion*, for the first fifteen days, is very villous on its external surface; these villosities appear to be spongy.

The *amnios* is a translucent, thin membrane at this period, and is separated from the chorion by the umbilical vesicle. It con-

tains a transparent fluid, which is furnished by the uterine capillary vessels; this fluid penetrates the interior of the amnios by transudation.

The *umbilical vesicle* has the form of an ovoid, slightly flattened, and which, perhaps, precedes in existence the embryo, to the abdomen of which it is united. Its use seems to be to nourish the embryo during its first evolution, for at that time there is no umbilical cord.

From fifteen to twenty days, the embryo measures from five to six lines in length. At one month, it is eight to ten lines long. At this period, the extremities appear under the form of small tubercles, which elongate, flatten, and progressively enlarge. Before the thirtieth day, the umbilical cord does not exist, the fœtus being in immediate contact with the membranes. But at one month, the cord is visible, and this fact I have verified in numerous instances. It is about one third the length of the fœtus, and is continuous with the prolongation of the umbilical vesicle (1); this prolongation measures from two to three lines, and, after the end of the first month, loses itself in the cord. There is a slight projection behind the insertion of the umbilical cord, the base of which encloses the intestine. At thirty days, we can often distinguish the openings of the nose. The ear is also quite manifest at this period, as are likewise the eyes; but there is no trace of the genital organs.

(Fig. 20.)

Embryo of one Month, natural size.



At two months, the embryo measures eighteen lines; the trunk becomes as large, and even larger than the head. Two round, black points designate the eyes, and a small transverse slit points out the mouth, above which are observed two small black points, the nostrils.

(Fig. 21.)



Although the genital organs are now visible, it is, however, difficult to distinguish the sex, the clitoris and penis having an identical

development. The extremities and fingers elongate, the clavicles, ribs, and maxillary bones present ossific points, all the other bones being yet in a cartilaginous state. The cord increases in thickness, and the placenta, the first traces of which are not observed until the sixth week, becomes more and more compact, and from this period it ceases to increase in a proportional ratio to the foetus and uterus. The amniotic fluid, until now small in quantity, undergoes a sensible increase.

§ 2. *Changes in the Uterus.*

After the ovule has reached the uterine cavity, the womb begins gradually to develop itself until the full period of gestation; but, before the third month, the changes which the uterus has undergone are not immediately appreciable except after death.

Diagnosis of Pregnancy.—The different characteristic symptoms of pregnancy are far from possessing the same degree of value. Their importance varies, in general, according to the period of gestation at which we seek to recognise them. M. P. Dubois has, therefore, divided them into the *presumptive*, *probable*, and *certain* signs of pregnancy.

But it must be remembered that this division is not always rigorously correct; for one of the presumptive signs, under peculiar circumstances, may constitute a probability; and, for the same reason, a probable sign may amount to a certainty: this, however, will be more particularly demonstrated in the sequel.

Before the third month, neither the changes of the uterus, nor those of the embryo, can be directly appreciated in the living woman. The only mode of distinguishing them is through the numerous sympathies which the womb exerts on the rest of the economy; thus, at this time, we have nothing but the presumptive signs to guide us.

However, certain authors have imagined that the neck of the uterus becomes somewhat more pointed from the first month; that its orifice presents a circular form, and that the inferior portion of the uterus, especially that part in contact with the bladder, is softer and more prominent. But it is so common to meet with these characters in women who are not pregnant, that, unless a different disposition should have been previously ascertained, we cannot, with propriety, hazard an opinion on such equivocal evidence.

§ 1. *Presumptive Signs.*

Among the presumptive signs, some, such as horripilations, colic, and syncope, follow immediately after conception; others, on the contrary, manifest themselves by degrees, either after or before the suppression of the menses, and at variable periods; it is thus impossible to classify them, like the others, from month to month, according to the time of their appearance. During the first three months, however, the eyes become sunken, lose their vivacity and brilliancy, and are surrounded by a blue circle; the features become sharp, the face is pale and covered with reddish spots, and sometimes with morpew; the neck increases in thickness.

Suppression of the Menses.—The suppression of the menses is the most valuable of all the presumptive signs. However, there are many circumstances foreign from conception, which may cause this phenomenon; thus suppression alone will not enable us to say that pregnancy exists. Farther, although suppression of the menses almost always accompanies pregnancy, yet the flow of the menses may continue during the first month, and sometimes even during the whole period of gestation; and thus the accoucheur be led to suppose that pregnancy does not exist. But the continuance of menstruation during gestation is a very rare circumstance, and if the suppression of this function only establish a presumption in favour of pregnancy, its continuance renders it almost certain that the female is not pregnant. This opinion I have frequently heard advanced by M. P. Dubois, and M. Moreau likewise concurs in it. This latter professor even maintains that the sanguineous discharges which he has observed during pregnancy possess none of the characters of menstrual blood, either as to quantity, consistence, colour, or periods of recurrence; and he also remarks, that he has experienced no difficulty in distinguishing them from the menses. These characters are, however, so equivocal, that it appears to me very difficult to distinguish the menstrual evacuation from the discharges capable of simulating it.

Finally, this sign loses all its value in women who are subject to irregularities in their menstrual periods; in such, for example, as have ceased to menstruate, either in consequence of disease or the progress of age, or who are giving suck, and especially in those who have become pregnant without ever having menstruated. Deventer and Baudelocque cite cases of women who menstruated only during pregnancy.*

* The opinion advanced by MM. Dubois and Moreau, that the continuance of the menses renders it almost certain that pregnancy does not exist, must be received with due caution. It is entirely too general, and it would be unsafe to let it pass without qualification. I think facts have shown that women do sometimes menstruate, not only during the first month, but during the entire period of their pregnancy; and if experience be appealed to, it will be found that such cases are, at least, not so rare as not to form important exceptions to so sweeping a declaration. I have attended a lady in three confinements, who has menstruated regularly for the entire period of all her pregnancies; and she is not aware of her being pregnant until she feels the movements of the fetus, which have invariably become manifest at the fourth month. This lady was subsequently under the care of Professor Warren, of Boston.

About three years since I was requested by a physician of this city to visit his wife in consultation with Dr. Freeman. The lady in question was the mother of two children. For a year previous to my seeing her, she had begun to decline in health, and there had been a gradual enlargement of the abdomen. Her menstrual evacuation had never been interrupted since the weaning of her last child, but occurred with great regularity at its accustomed periods. She was somewhat emaciated, and I found that about four weeks before my visit, pus had commenced discharging through her rectum, which continued, in greater or less quantity, up to the time that I saw her. The opinion which Dr. Freeman had formed was, that this was a case of ovarian disease, with purulent secretion in the substance of the ovary. This opinion I fully concurred in; and after an attentive examination both per vaginam and per rectum, I discovered that the uterus itself was also enlarged so as to extend about three fingers' breadth above the symphysis pubis. By placing my finger on the posterior surface of the neck of the womb, and gently raising it, I distinctly discovered the motion of a fetus. This fact I communicated to Dr. F., and also to the husband; I pronounced the lady pregnant, and, at the same time, to be labouring under ovarian enlargement. Dr. Freeman being the family physician, delivered her, about five months after this, of a child. Here, then, was a case of pregnancy, without any interruption in the menstrual periods. I am at this time attending a lady from Mobile, who has been under my care for the last eighteen months. She, too, is affected with ovarian disease, and has never

A. *Disturbance of the Digestive Functions.*—The taste becomes perverted; digestion is more laborious; nausea and vomiting supervene, and are followed by complete loss of appetite. It is now that those depraved tastes manifest themselves, known as *longings*, which sometimes are for the most delicious articles of diet, spirituous liquors in large quantity, and sometimes for unnatural objects, such as charcoal, earth, chalk, unclean animals, &c., &c. But after the first months, these depraved fancies are succeeded by a good appetite, sometimes even voracious, and by easy digestion, which, however, becomes incommoded at the latter period of pregnancy, in consequence of the oppression produced upon the stomach by the increased growth of the womb.

B. *Disturbance of the Nervous System.*—The functions of the mind are also occasionally subject to almost incredible changes. Some females become misanthropic and unsocial during pregnancy; some, of the most gentle and amiable disposition, are led on by an invincible influence to the commission of the most atrocious crimes; others, again, whose passions do not acquire this degree of violence, become sad and melancholy, and hate those whom they had most loved previous to their pregnancy. Some, indeed, of a morose temper when not pregnant, exhibit the most remarkable gentleness of character as soon as pregnancy commences.

C. *Changes effected in the Breasts.*—Swelling, tension, painful sensation, brown colour and elevation of the areola, erection of the nipple, the presence of papillary tubercles, and the secretion of milk, are among the signs of value.

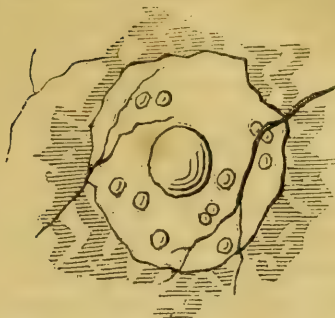
The tumefaction, pain, and tension are sometimes, however, present without pregnancy; the first conjugal approaches, retention of the menses, the period of their return, a chronic *metritis*, may determine this condition of the breasts. Gardien has also remarked that, when the menses continue during pregnancy, this reaction towards the mammæ is very slight.

The coloration and elevation of the areola are, according to some authors, important signs, the more so, indeed, because they exist during the first months, when the diagnosis is necessarily very obscure. The coloration depends upon a deposit of pigmentum in the mucous portion of the skin (fig. 22).

Hunter, who regarded this darkening of the areola as conclusive, maintained, in the presence of his pupils, that a young girl, in whom the hymen existed, was nevertheless pregnant, simply because there was change of colour in the areola; on making a post mortem examination, it was found that she was, in fact, four months

suffered from menstrual irregularity. About six months since, she thought her size was increasing rapidly, and complained of great inconvenience. On instituting a vaginal examination, I discovered that the uterus was considerably developed, but could not recognise any active motion of the fœtus, nor, after several attempts, could I succeed in detecting any evidence of pregnancy by the *ballotement*. The stethoscope, however, enabled me to hear the pulsations of the fœtal heart, and much to the happiness of the lady, I pronounced her pregnant. On the 20th of August of the present year, I delivered her of a healthy boy. Here, again, was a case of pregnancy, and no interruption of the menses. Could the diseased ovaries, in these two cases, have had any influence in continuing the menstrual flow during gestation? I think it probable. Dr. Denman, I conceive, has done much injury by his broad and unequivocal denial that a pregnant female can menstruate. Many of the admirers of this excellent writer have, I fear, too hastily adopted his opinion.—En.

(Fig. 22.)



in gestation. The colour varies from a clear lustre to a very dark hue. I have had drawings made at La Clinique from women who presented this latter tint, and the colour is more manifest as pregnancy is farther advanced. The elevation of the areola above the level of the integument (see fig. 23) almost always accompanies the change of colour.

(Fig. 23.)



It is the same with the erection of the nipple, which enlarges and becomes darker, but this sign does not appear until somewhat later, from the fourth to the fifth month. About the same period there also appear on the areola small papillary tubercles, more or less numerous, which are species of small glands, having an excretory duct, from which by pressure there will exude a sero-lactescent fluid: this fact I have often observed. M. Montgomery, who has given an excellent description of the signs furnished by the breasts, which he has accompanied by graphic illustrations, attaches great importance to the development of these tubercles. This sign he considers infallible; but it is necessary to state that it, as well as the preceding, is sometimes wanting when there is pregnancy; or becomes developed without pregnancy, which, however, is more rare. It may be remarked, too, that these signs lose all their value when the woman has previously borne children, for they do not always become effaced after delivery, but continue for a greater or less period, especially in women who nurse; and if, under these circumstances, the female again becomes pregnant, how

are we to ascertain whether these changes are the result of the present or preceding pregnancy? But these are merely exceptions to a general rule, and in a female not previously pregnant, this darkening and elevation of the areola, the erection and coloration of the nipple, the development of the papillary tubercles, are of great importance; and in this case, on seeing these characters alone, I would decide that pregnancy existed.

The secretion of milk, as a sign of pregnancy, should also be considered, although other circumstances than pregnancy may produce it; such as puberty, the approach of the menses, &c., &c. Young women have been known to give suck to children without ever having been pregnant; and we must distrust this sign in legal medicine, where a woman who is nursing (but concealing this latter circumstance) might endeavour to simulate pregnancy, and present as an evidence of her condition the fact that she had milk in her breasts.

M. Jacquemin regards the bluish colour assumed by the mucous membrane of the vagina as a most significant sign, and I entirely concur in opinion with him. His position as surgeon-in-chief at La Force has enabled him to establish the fact that this change of colour in the vagina is very seldom absent in pregnant women.

M. Beccaria attaches great weight as a sign to pain felt in the occiput; and M. Nauche thinks he can derive the most positive evidence of pregnancy from an inspection of the urine: others, again, contend that the state of the pulse is a sure indication. Numerous experiments made at La Clinique have convinced me that these conditions do not exist in most cases, or, at least, that it is impossible to recognise them; and as to the pulse, I have remarked only that it is harder and more developed, but I have never been able to detect any other characteristic difference.

Lastly, we have the development of the abdomen, which may be divided into two periods; the first appertains to the presumptive signs, and is caused by a temporary flatulence, which ceases towards the third month. At this period, the abdomen, which was manifestly elevated, becomes so flattened as to induce the woman to doubt whether she is pregnant. But soon, the uterus continuing to rise, pushes before it the abdominal walls, and the abdomen again begins to enlarge. This constitutes the second period, which furnishes a number of important signs, and which must be classed among the *probable* evidences. It also presents other signs, of which I shall speak hereafter, such as the darkening of the linea alba, transverse wrinkles of the integument of the abdomen, and prominence of the umbilicus.

In fine, the presumptive signs, which have no great value when isolated, acquire much more importance when observed united in the same woman; this combination constitutes a probability. However, we must be guarded against error even under these circumstances, for it is well known that the first conjugal embraces may determine suppression of the menses, which, in this case, is always accompanied by reaction in the breasts, slight meteorism of the abdomen, and disturbance in the digestive functions, although pregnancy does not exist.

§ 2. *End of the third Month—Probable Signs.*

I have just mentioned, in the preceding section, how the changes effected in the uterus, reacting on the entire economy, are made apparent by means of signs, which have no certain value. It now remains for me to show how the marked alterations which pregnancy determines in the uterus and neighbouring organs, after the third month, constitute signs to which is attached a higher value, and which are named the probable signs. These different signs are perceived in the body and neck of the uterus; the mode of investigation must, of course, vary. In the body we have recourse to abdominal percussion and auscultation; for the neck we employ the vaginal touch.

It is by the aid of these different means that I shall now successively examine the changes in the uterus, in proportion as they manifest themselves from month to month. I shall be careful, also, to mention those which cannot be appreciated until after the death of the woman, or the expulsion of the aborted ovum.

It is not until the end of the third month that we can assure ourselves of the development of the uterus, but at this period we cannot say that pregnancy exists. The uterus may be modified in its form, consistence, and volume, and yet not contain a normal conception. And these changes may then depend on the presence of a mole, polypus, or on some morbid condition of the organ. It is not, therefore, until a more advanced period of gestation that the existence of pregnancy can be positively ascertained. The changes produced in the inferior portion of the womb are those which can be soonest recognised, and this is done by means of the touch

§ 3. *The Vaginal Touch.*

The touch, or introduction of one or more fingers into the genital organs of the female, is performed with a view to ascertain the condition of the external organs of generation, the conformation of the pelvis, the changes in the inferior portion of the uterus and adjoining organs, and, finally, the nature of the uterine contents.

This operation is practised when the woman is either in the standing or horizontal position; standing, if, in consequence of a lesion of the organs of respiration or circulation, she cannot take the horizontal position; and in this latter posture if she is debilitated, threatened with hemorrhage, or is labouring under a decided ante-version of the uterus. In the latter case, the fundus of the organ is thrown considerably forward, and it will be very difficult to reach the neck, in consequence of its being high up and thrown backward. Under these circumstances, it will be made more accessible to the finger by placing the fundus of the womb in its natural position.

Whether the female is in the erect or horizontal posture, it is important to have the abdominal muscles in a state of relaxation, by causing the legs and thighs to be flexed. In the standing attitude it will be useful to recommend the woman to throw the body back-

ward, although this position, in rendering the muscles of the abdomen tense, destroys in part the effect obtained by the flexion of the legs. I am, however, satisfied that in thus bringing the pelvis of the woman forward by means of the other hand placed behind the loins, the neck of the uterus can be more effectually brought to the centre, and the facility of reaching it much increased. It is with this view that, when the female is lying down, after having requested her to flex her lower extremities, she is told to elevate the pelvis, and, if necessary, she is sustained in this position by means of a cushion or the hand placed under the lower part of the back.

Having taken these precautions, the index finger is lubricated with some oleaginous substance, as well to render its introduction easy, as to avoid the danger of contagion. It is extended and applied upon the perineum by its radial border; thence it ascends gently towards the vulva, following the raphe of the perineum; it passes the inferior commissure and penetrates the vagina, separating the labia and pursuing the axis of the vulva. In this course, the accoucheur should examine the state of the perineum and labia majora, the conformation of the pubic arch, the bladder, the vaginal walls, and rectum; then, in passing his finger in the direction of the sacro-vertebral angle, he will be enabled to appreciate the condition of the superior strait; finally, he reaches the vaginal neck, or *os tincæ*. He will now ascertain its form, absolute length, the relative length of its lips, its direction, consistence, and regularity; the degree of opening and uniformity of contour of its orifice; the weight of the entire organ, by slightly raising it; its height, by endeavouring to include the uterus between the finger applied upon the neck and the hand placed upon the fundus, through the hypogastric walls; its development or its vacuity, by attempting to feel the body of the organ through the cul-de-sac of the vagina. It is by this same procedure that the condition of the neck of the womb above the vagina may be ascertained. In fine, the nature of the bodies contained in the uterus will be recognised by the *ballottement*, a sensation which does not become manifest until a more advanced period of pregnancy, and of which we have not yet spoken.

In the examination of these various conditions, we must not lose sight of the changes which previous accouchements may have produced in the organs; and it is also necessary to consider the diagnosis in a woman who has had children, and in a primipara.

A. *Development of the Fœtus*.—At three months, the fœtus measures three inches; its integuments are gelatinous, but easily distinguished, and of a reddish white. The head is very large; the eyelids and mouth are closed; the nose is very prominent; the fingers and toes are perfectly separated, and covered at their extremity by a reddish material which represents the nail; the brain is no longer fluid, and assumes a caseous consistence; the spinal marrow fills the length of the vertebral canal; the coccygeal prominence is effaced, and sometimes the umbilical vesicle has disappeared. The umbilical cord still contains a portion of the in-

testine, the omphalo-mesenteric vessels which pass from the vesicle, and the two arteries and umbilical vein. The mass of amniotic fluid at this period exceeds that of the fœtus.

B. Situation of the Uterus.—The uterus is contained in the cavity of the pelvis; its fundus does not extend above the pubes; however, with one hand placed upon the hypogastric walls, especially if the neck is raised by the finger introduced into the vagina, it will be easy to feel the fundus of the womb, which is thrown a little backward and to the right; this viscus is softened in its whole extent, and particularly at its inferior part. Some authors have thought that the os tincæ is longer at this period than in the unimpregnated state, but such is not the fact. The descent of the entire organ, which is determined by its weight and softness, has given rise to the belief that the neck becomes lengthened. In fact, if the neck be circumscribed by the index finger, it will be perceived that the vagina is slightly shortened, that the extremity of the finger is arrested by the cul-de-sac of the vagina, and that above this cul-de-sac there is felt a resisting body, which is nothing more than the inferior segment of the enlarged womb. And, moreover, if the finger placed upon the neck attempts to elevate the organ, its weight and immobility are immediately perceived. We may also form an idea of the length of the uterus by including it between the finger placed upon the neck and the hand applied to the exterior of its fundus.

C. Length.—Measured on the cadaver, the length of the body of the womb is three inches, and if be added to this for the length of the neck twenty-two lines, we shall have for the vertical diameter four inches and eight lines; but, in consequence of the sinking down of the uterus, this diameter is not more than four inches and six lines.

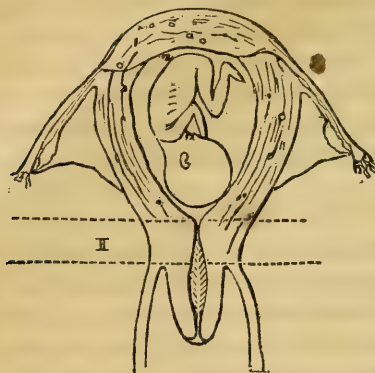
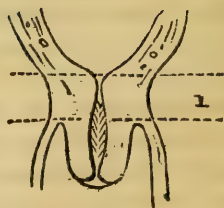
D. Form.—The uterus, which, in its unimpregnated state, was pyriform, flattened from before backward, now becomes somewhat rounded. The anterior surface, a little more convex than the posterior before conception, maintains this same character during pregnancy.

E. Thickness.—The thickness of the walls increases slightly in consequence of the development of the muscular and vascular tissues; but it is difficult to recognise these changes at so early a period of pregnancy.

The first changes in the body of the uterus are nearly the same in a primipara as in subsequent pregnancies. But in a female who has borne children, such is not the case with the changes produced by pregnancy in the neck.

However, the primipara and female who has borne children have some characters in common. The finger introduced into the vagina discovers the vaginal portion of the neck low down, enlarged, and softened at its base, while that portion of the neck above the vagina is not yet changed.

In the primipara, the transverse orifice of the womb becomes circular: it is regular in its contour, and closed; the os tincæ

(Fig. 24.)
Primipara.(Fig. 25.)
Female who has had children.

Reduced to one third its natural size.

is smooth and polished; the two lips are nearly on the same level, in consequence of the shortening of the anterior lip: this latter sign is not very positive. The entire neck measures about two inches.

In the female who has had children the orifice is likewise rounded, but it is irregular, and presents a number of cicatrices, especially on the left; it is sometimes open, and will admit the extremity of the finger. The neck is much larger than in the primipara; and it is also shorter, softer, and less smooth.

F. Difficulty of appreciating these Signs.—It is not always possible fully to recognise these different characters. Certain circumstances, such as a painful condition of the abdominal walls, tumefaction of the labia majora and sensibility of the womb, will occasionally render it impossible to detect these signs. And again, if, in their absence, it is, at least in a majority of cases, possible to deny the existence of pregnancy, yet we cannot always, when the signs are present, positively affirm that pregnancy exists; for at this period of gestation, as has already been observed, all that we can do is to ascertain that the uterus is enlarged; but whether this development depends upon the presence of a fœtus or upon an abnormal condition, is a point possible, it is true, to establish in some instances; while in others the whole matter rests in doubt until additional symptoms render the diagnosis positive.

In fact, at the approach of the menstrual period in some women, the uterus, in consequence of its congested condition, occasionally becomes as large as in the third month of pregnancy, and we are more liable to error, because in this case the neck is slightly softened and open. At other times, the menses retained in the cavity of the uterus, in consequence of the closing of its internal orifice, distend, by their accumulation, the walls of this organ, and thus give rise sympathetically to many of the *presumptive* signs, such as tumefaction and pain in the breasts, disturbance in the digestive functions, &c., &c.—circumstances which increase the chances of error.

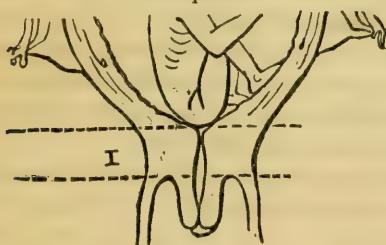
In vain will it be urged that in these cases it will be easy to dis

tinguish the physiological from the pathological condition of the uterus, by the suppleness of its walls; this is possible in some circumstances, especially if care be taken to push the fundus of the womb backward, in order that it may become more accessible to the finger introduced into the posterior cul-de-sac of the vagina. I have succeeded sometimes in this manner; but it must be admitted that it is often impossible to establish the diagnosis

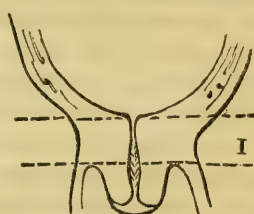
§ 4. *End of the Fourth Month.*

A. *Development of the Fœtus.*—At the end of the fourth month, the fœtus, estimated from the occiput to the coccyx, measures about five inches. Its skin has now become somewhat firm; slight granulations of cellular tissue are already observed; the muscles begin to be fibrinous and contractile; the head is covered with a light down; the anus opens; the scrotum, labia majora, and nymphæ swell out; the spinal marrow leaves the inferior portion of the vertebral canal.

(Fig. 26.)
Primipara.



(Fig. 27.)
Woman who has borne children



B. *Changes in the Uterus.*—The entire uterus can no longer be contained in the cavity of the pelvis; it rises above the superior strait, and the vagina becomes elongated. At this time the second period of the development of the abdomen begins to be manifest, less to the view than to the abdominal exploration. The hands applied to the abdomen distinguish between the pubes and umbilicus a spheroid, regular, elastic tumour, which rises on a median line, and feels like a bladder nearly filled with water. The uterus in women who have borne children does not rise so high, because the abdominal parietes, being relaxed, do not support the organ so firmly in its ascent.

C. *Length.*—Examined in the cadaver, the body of the uterus measures three inches and six lines.

The changes in the vaginal portion of the womb after the end of the third month do not exhibit such defined differences as to be readily appreciated; it is not until the end of the fifth month that we can distinctly recognise marked alterations in this part of the uterus. (See *End of the Fifth Month.*)

D. *Active Motions of the Fœtus.*—It is generally about this period, the end of the fourth month, that the female begins to feel the active movements of the fœtus. At first it is nothing more than a confused vibratory sensation, which gradually increases, and which

the accoucheur even can feel by placing his cold hand on the abdomen. This sensation of cold is probably felt by the fœtus through the abdominal and uterine walls, for it is generally found to move with rapidity. But, notwithstanding the real value of this sign, we should not place exclusive confidence in it; for some women have believed they have experienced the fœtal movements, and therefore supposed themselves pregnant, when in fact they were not so. A woman who died at the clinique of the faculty of an ovarian tumour, which had been mistaken in the city for an extra-uterine pregnancy, thought she felt life, when M. Dubois satisfied himself she was not pregnant. This case was the more remarkable, as, at the supposed period of nine months, she experienced all the external signs of commencing labour, without, however, any evident dilatation of the neck; her physician having been sent for, found her bearing down with all her force in order to hasten the expulsion of the child. M. P. Dubois has frequently mentioned instances of women who presented themselves at his lectures for the practical exercises of the pupils, and who possessed in a high degree the faculty of simulating the movements of the fœtus by the partial contractions of the abdominal muscles.

It is evident, from these examples, that it is exceedingly easy to commit an error at so early a period of pregnancy. The phenomena which may be mistaken for the active movements of the fœtus, arise from the circulation of gas in the intestines, the contraction of the intestines, a common circumstance in hysteria, and, finally, from the voluntary or involuntary contraction of the abdominal walls.

It may also happen that the female is pregnant, and yet neither she nor the accoucheur be conscious of the fœtal movements. I have known women quicken, not until a very advanced period of pregnancy; some, even, which is rare, however, bring forth healthy living children without ever having perceived this sensation.

These movements may cease entirely after having been felt, without the death of the child. This circumstance is generally attributed to local or general plethora of the mother reacting upon the fœtus; and this view is confirmed by the fact that, after a slight sanguineous depletion, movements of the fœtus are again experienced.*

* I recently met with an interesting case of disease in a lady, the wife of a physician, and whom I saw with Professor Mott. She had been labouring, for about three months previous to my seeing her, under ascites. Her general health was bad, together with considerable derangement about her uterus; sometimes menstruating copiously, and then passing her periods without the slightest show. In a vaginal examination, I ascertained that the uterus was enlarged about four times its ordinary size. From the great accumulation of fluid in her abdomen, it became necessary to remove it by tapping. This operation was performed by Professor Mott four times, at intervals of six or eight weeks. The last tapping was followed by severe inflammation; and for four months there was no appearance of water. However, about three weeks since, on visiting her, I found the abdomen somewhat distended with fluid, and in exploring the abdomen carefully, I distinctly felt two small tumours, floating about in the fluid, and attached, as I suppose, to the fundus of the womb; being the ordinary fibrous growths, which are not uncommon, and which are frequently pediculated to some portion (most usually the fundus) of the womb. These tumours would move with the motion of the patient, and might have been mistaken for either the passive or active motions of the fœtus.—Ed.

Passive Motion of the Fœtus.—The accoucheur can also, at the end of the fourth month, determine the passive motions of the fœtus, either by means of the abdominal *ballotement*, or by a vaginal examination, and this sign is of great value. In order to perceive this sensation by the abdominal *ballotement*, it will be necessary to place one hand on the tumour formed by the uterus, and depress the abdomen by a successive series of brisk and rapid movements with the extremity of the fingers united. We then feel, in the midst of a fluid, a light, floating body, which passes under the fingers at each impulse communicated to it. This body is the fœtus. It is not difficult to distinguish this phenomenon, after having noticed it a few times, from the impression imparted to the fingers by movable tumours developed in the abdomen.

(Fig. 28.)



To obtain the same result by the vaginal touch, the woman should stand up or lie down, and the index finger, the palmar surface being in front, should be placed on a soft tumour felt at the superior part of the vagina, between the symphysis pubis and anterior lip of the os tincæ, and the finger should then be moved rapidly from behind forward, and from below upward, the wrist being generally motionless. This slight shock is communicated to the fœtus through the inferior uterine wall; and the accoucheur is sensible that he displaces a small, movable body which floats in the liquor amnii. But this small body is very rarely felt to fall back on the finger. At this period of pregnancy, the fœtus is too small for this last sensation to be perceptible, and the only evidence that this body has again returned to the inferior portion of the womb is that it can be displaced by a repetition of the operation.

Sometimes, especially when the female is lying down, this movement of the finger alone will not suffice; it becomes necessary to assist it with a slight action of the arm. Indeed, sometimes the sensation will be more manifest at the posterior part of the inferior segment of the uterus, that is to say, in the posterior cul-de-sac, but this is rare. Finally, notwithstanding all these precautions, it will occasionally be the case that, at this period of gestation, the passive motion of the fœtus cannot be felt several times successively, in consequence of the fœtus, after being displaced the first time.

becoming so situated as to render it impossible to reach it; and sometimes, too, it cannot be felt at all.*

Difficulty in detecting this Sign.—The difficulties frequently met with in detecting the passive motions of the fœtus may depend on extreme distention of the uterus, on the thickness of the abdominal and uterine walls, or on pain of these parts; and sometimes an obstacle is presented by displacement of the inferior segment of the uterus, in consequence of tumours developed below it. Again, certain presentations, such as the head, favour the ballottement; while others, such as the pelvic extremity or trunk, prevent its detection. As I shall explain hereafter, the head pushes before it, in the cavity, the inferior segment of the uterus, and renders it more accessible to the finger, while the other parts, which remain elevated above the superior strait, cannot be easily reached. Several circumstances may delude us as to the ballottement; for example, a calculus contained in the bladder, or an ante-version, with softening of the body of the uterus. This latter case can only give rise to momentary error, for the direction of the neck, which in ante-version is carried backward, indicates perfectly well that it is the inclined fundus of the organ, which presses upon the superior wall of the vagina. I must confess, however, that the sensation experienced in this case is very deceptive, and that it sometimes exactly simulates the ballottement. I have had occasion to test this fact; but, by causing the woman to lie down, the uterus would resume its natural position, and all difficulty is at an end.

* *Active Motion of the Fœtus.*—Women who have never borne children, and whose desire has been to have offspring, are generally very apt to imagine themselves pregnant; and there are few symptoms about which they are more readily deceived than the active motion of the fœtus. The accoucheur should never rely upon any statements made by his patient in cases of doubtful pregnancy, especially if any important interest, such as character or property, be involved in the issue. It is his duty to judge for himself, irrespective of all adventitious or other influences; let his mind be free from all bias, and judge of the case according to the evidence which may be presented to his senses. Such is the rule of conduct I would most earnestly enjoin on all who may wish to discharge their trust fearlessly, and, at the same time, justly. A most amusing case occurred in this city some ten years since, and will, perhaps, serve more effectually to illustrate an important truth in midwifery than any argument I could advance. A lady, aged forty-seven, who had been married since her thirtieth year, had entertained a most anxious desire to become a mother, but had not succeeded in her wishes, and was about abandoning all hope, when, of a sudden, she noticed that her abdomen began gradually to enlarge, and she really imagined herself pregnant. In addition to the ordinary symptoms of gestation, she thought she distinctly felt the motion of her child. She received the congratulations of her friends, was complimented on her prowess and the final accomplishment of her hopes after years of fruitless effort, and commenced making the necessary preparations for her approaching accouchement. Her physician was sent for, and was informed that his services would be required, &c. In the course of a few months, the labour commenced; a messenger hastened to admonish the doctor that the lady's time had come, with a request that he would lose no time in reaching the bedside of his delighted patient. The doctor arrived—all in the house was confusion—the nurse was enchanted—the husband could scarcely realize the advent of this long-expected era in his life—the patient was in actual labour—the pains frequent and distressing—the physician was entreated to lose no time in assisting madam—he instituted an examination—the silence of death now pervaded the lying-in chamber to hear from the lips of the oracle the exact facts of the case. They were soon made joyful by hearing from the doctor that all was right—that the labour was quite advanced, and in a very short time would be completed. The sufferings of the patient increased—she was requested to make the most of her pains—to bear down and assist nature—when, lo! in the midst of one of those powerful efforts to “assist nature,” there was heard an explosion, which struck terror into the hearts of all present, the doctor included. The patient immediately exclaimed, “*Oh! dear doctor, it's all over; do tell me if it is a boy.*” The explosion was nothing more than an escape of air from the bowels, the patient having mistaken flatulence for pregnancy, and the rumbling of the gas in the intestines for the motions of the fœtus. Comment is here unnecessary; let this case, however, admonish the pupil of the necessity of caution.—ED.

Notwithstanding all these causes of error, this sign, it must be recollected, is very positive.

The uterine souffle is very frequently perceived at this period, as are also the pulsations of the heart; but it is not until the following month that these changes in the circulation become quite manifest.

§ 5. *End of the Fifth Month.*

Development of the Fœtus.—At five months the fœtus measures, from the occiput to the coccyx, from six to seven inches. The abdominal extremities, including the feet, begin to exceed the thoracic. The skin assumes a greater degree of consistence; it loses its transparency, and in certain parts of it there is observed a sebaceous material. The hair commences to grow, but is yet white; the nails are evident; the umbilical cord is longer; the auricles of the heart, previously larger than the ventricles, are now reduced to the same dimensions. The stomach and small intestines are filled with reddish meconium; the pupil cannot be distinguished.

Position of the Uterus.—At the end of the fifth month the uterus has already acquired too much increase to remain in the excavation; it rises more and more above the superior strait, so that the fundus of this organ is almost on a level with the umbilicus in a primipara; it is a little inclined to the right and in front. In consequence of the elevation of the uterus, the vagina becomes elongated; the uterus raises with it the peritoneum; the folds and ligaments of this membrane become effaced; the ovaries approach the vertical line, and are close to the uterine walls; the round ligaments lengthen, and begin to present a muscular organization.

Form of the Uterus.—The body of the uterus is nearly round; the thickness of its walls is the same as in a state of vacuity.

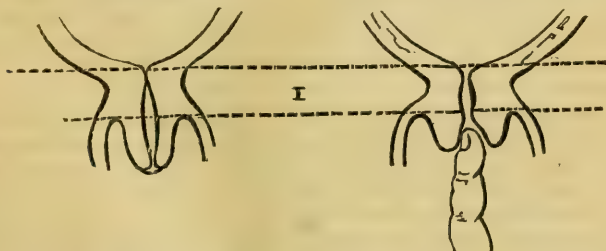
a. Length.—Measured from the internal orifice to the summit of the organ, the body gives five inches; and if to this be added fifteen to eighteen lines for the length of the neck, the entire long diameter of the uterus will be six inches and a half.

(Fig. 29.)

Primipara.

(Fig. 30.)

Female who has borne children.



Changes in the Inferior Part of the Organ.—The uterus being elevated above the superior strait, the finger, in seeking the neck, will have to pass higher up than at the previous period. The fundus being slightly inclined to the right and in front, the neck will, of course, be directed a little backward and to the left; the neck, in its totality, still measures from fifteen to eighteen lines, and this

diminution in the length is effected at the expense of its vaginal portion only, the portion of the neck above the vagina having undergone no diminution, which circumstance can sometimes be ascertained at this period by introducing a finger into the cul-de-sac of the vagina. In primiparæ, the vaginal portion has preserved a certain regularity in its form; it is, however, softer, and the two lips are about on a level, but the orifice is still closed. In women who have borne children, the neck is considerably softer and shorter; the external orifice, which is irregular, begins to open, and will permit the introduction of half of the first phalanx of the fore finger, and sometimes more.

Passive and Active Motions of the Fœtus.—The abdominal and vaginal ballottement becomes more manifest; the active movements are also much more perceptible.

b. Auscultation.—At this period, the signs furnished by the uterine and fœtal circulation are readily perceived by the ear.

It was M. Mayor who, in 1818, first applied auscultation to pregnancy. M. Kergaradec, after him, stated that, in the pregnant woman, two different sounds could be detected, one of which, consisting in a series of double pulsations, is occasioned by the fœtal circulation; the other, similar to the bellows sound, appeared to him to be the result of the placental circulation.

c. The Bellows Sound.—The intermittent bellows sound, which is generally compared to the sound in the carotids of chlorotic persons, is synchronous with the pulse of the mother. Each author gives a different name to it, according to the cause which he supposes to have produced it.

Thus it is called the placental *souffle*, because its production is attributed exclusively to the circulation in the placenta; but, if this were the case, the *souffle* should be heard in the same woman at the same point during the whole duration of pregnancy; and, as I shall immediately remark, nothing is more variable than the seat of this sound. Moreover, it is heard with precisely the same character in cases in which the uterus is enlarged by an abnormal growth, or in the development of the ovaries; and in cases in which the placenta does not exist; often even after accouchement, when the placenta has been extracted, this sound is still manifest. These facts will undoubtedly suffice to show that it is not owing to the placenta.

M. Bouillaud,* who has given it the name of abdominal *souffle*, thinks that it is produced by the compression of the large vessels placed in the posterior and lateral portions of the abdomen—the aorta and iliac arteries.

M. P. Dubois, on the contrary, who regards it as the result of the uterine circulation, denominates it the uterine *souffle*, and he maintains this opinion on the strength of an anatomical fact, which I myself have observed.

It is easy to demonstrate that there exist, in the uterine vascular

* Clinical Treatise on Diseases of the Heart, 2d ed., Paris, 1841, t. i., p. 274.

apparatus, modified by pregnancy, ready communications between the arteries and veins, so that the walls of the uterus appear to be transformed into an erectile tissue ; the blood, passing with rapidity from the arterial orifices, meets in the veins, which present a larger calibre, a column of blood which flows less rapidly, and from this passage results the *souffle*. This sound will be the more apparent as the auscultation is made at a point nearer the placenta, where the uterine circulation is necessarily more active.

This opinion appears to me highly probable. It is certainly in the walls of the uterus that the *souffle* takes place ; but may it not be possible to reconcile, in part at least, the theory of M. Bouillaud, to which I attach great importance, with the opinion of M. P. Dubois ? I must confess that it does not appear to me at all impossible, and in this way I have been enabled to explain many circumstances, which I shall now enumerate.

In a great number of experiments made at La Clinique, either alone, or with the assistance of my friend, Doctor Devilliers, I have observed the following facts : 1st. This sound is not perceptible in all women ; 2d. After having recognised its existence once or twice, it is sometimes impossible again to detect it, no matter on what part of the abdomen the stethoscope is applied ; again, when least expected, it is heard, and increases in a remarkable manner ; it passes rapidly away, frequently by changing its place. I have often remarked that this fact coincided with a rapid movement of the fœtus, a circumstance to which I shall allude immediately. Nothing is more variable than the seat of this sound ; it may be heard over the entire periphery of the organ, and with the same intensity in the most opposite points.

The portions in which I have most frequently perceived this sound correspond to the parts of the pelvis on which the uterus reposes, towards the two iliac fossæ, when the woman is standing ; somewhat lower down when in the horizontal posture.

From these facts, it is reasonable to infer that this sound occurs in the uterine walls, as contended for by M. P. Dubois ; for it has no fixed seat, and it should always be heard in the same place, if, as M. Bouillaud believes, it depended on the compression of vessels out of the uterus ; and that the compression is certainly the determining cause of this sound, but that it is exerted on the walls of the uterus, and not on the neighbouring vessels of the organ, whether the organ itself be compressed on the parts which sustain it, which fact would explain, without admitting the compression of the iliac vessels, how it is that the sound is heard in the iliac fossæ when the female is standing, and higher up and more posteriorly when she is lying down ; or whether its walls undergo compression between the fœtus and abdominal parietes. This compression is increased by the stethoscope, and this latter circumstance satisfactorily shows how, in consequence of a rapid movement of the fœtus, displaced by the instrument, the sound ceases, and again manifests itself in an opposite point.

In fine, it might be possible that it depended on the united cir-

culatation of the uterine vessels, and of those adjoining this organ. The remarkable differences observed in its rhythm, according to the place at which it is perceived, rather tend to corroborate this latter opinion. I have often observed, with my friend Doctor Devilliers, and frequently called the attention of my pupils to a slight peculiar sound, which accompanies the *souffle* at its expiration; it is shrill, and resembles somewhat the noise which follows the cooing of the turtle-dove. I am entirely ignorant how this peculiarity is effected, nor am I disposed to attach any importance to it.

The uterine *souffle* will not serve to point out the insertion of the placenta, for the reason already stated, *its want of fixedness*; for it is frequently heard with the same intensity at different points. Finally, the *souffle*, as a practical sign, possesses only secondary value, for it is not always distinguishable, and even when perceived, it may be determined by the growth of a fibrous tumour in the uterus, a mole, &c., &c. It also is sometimes observed in cases of ovarian enlargement simulating pregnancy.

D. Sound of the Heart—Positive Sign.—The pulsations of the foetal heart constitute the only positive evidence of pregnancy, and I place them among the probable signs merely not to invert the order according to which the various signs characterizing human gestation manifest themselves. Sometimes a practised ear may, as I have already said, perceive these pulsations as early as the fourth month; but ordinarily not until the end of the fifth month, and often even between the fifth and sixth month.

They are not synchronous with the beats of the maternal pulse, and they number by minute from 130 to 140: they are not regular, and become very frequent or slow without our being able to assign any cause for these changes.

These pulsations are usually heard in circumscribed points; but they may likewise be perceived over almost the entire of the abdomen; but in this case they have not throughout the same intensity. I will allude again to this circumstance. During the first months the part at which these pulsations are best heard is not fixed, for at this period the foetus may move, and suddenly change the relations of contiguity between the point of the abdomen on which we auscult, and the posterior precordial region of the foetus where these sounds are most distinctly recognised.

It is not until after the seventh month that the foetus, by its size, has acquired sufficient fixedness to render the seat of these pulsations less variable; and this circumstance, as I shall immediately explain, will sometimes enable us to specify at an advanced period the particular portion of the child that is at the uterine orifice (presentation), and the relations it bears to the parts of the mother (position). If the pulsations are more distinctly heard on the point of the abdomen with which the dorsal region of the foetus is in relation, this depends on the attitude of the foetus in the womb; the anterior curvature of the trunk, the flexion of the extremities and head, conceal the anterior precordial region, situated at the base of the space, which separates the upper from the lower extremity

of the fœtus; the stethoscope, therefore, cannot be applied immediately on this part, while, in consequence of this attitude, the posterior precordial region is in relation with the abdominal walls of the mother, and the transmission of sound is, therefore, much more direct.

(Fig. 31.)



Before the seventh month these pulsations are most commonly heard in the middle of the space comprised between the pubes and umbilicus. Their intensity increases with the advancement of pregnancy.

The pulsations, according to some authors, cannot always be perceived. M. P. Dubois, however, in one hundred and ninety-five women examined by him, heard these pulsations distinctly in one hundred and eighty-five; and in ten instances only they were not manifest. Certainly, we should infer that, in these cases, the fœtus had ceased to live. And I do not hesitate to affirm, founding my opinion on a great number of observations made at La Clinique and in my lecture-room, that, in all instances in which the child is alive, the pulsations of the heart can be detected. In these circumstances, I have always heard them after the sixth month, not always, it is true, with the same facility; for it will be readily conceived that the facility of sound will be more or less interfered with by the position of the fœtus, the interposition of the intestines between the uterus and abdominal walls, the muscular contraction of these walls, &c., &c.

The pulsations, or double beats, are composed of two periods, the first more feeble, the second stronger and sharper, so that it sometimes presents a metallic sound; a circumstance which M. P. Dubois was the first to point out, and which I myself have very frequently observed.

The pulsations serve also to inform us in reference to the actual condition of the fœtus, whether it be living or dead. As regards this latter point, if the pulsations cease to be heard, or if it is impossible to perceive them, when all the other signs establishing the reality of pregnancy are present, the death of the child is no longer doubtful, as I have already remarked. But this is not the place for the consideration of this topic; it will receive due attention in the articles entitled *Death of the Fœtus*, and *Compression of the Cord*.

When we seek for the uterine souffle, or the pulsations of the heart, the woman should be in the recumbent posture. This precaution is indispensable during the first months; and it is useful at a more advanced period. The bed should not be too low; for when the accoucheur is obliged to remain a long time in the bending position, the ear becomes more or less congested, which occasions a humming, and the sense of hearing is thus completely deadened. It will not be necessary to uncover the abdomen; but it should not have more than a single fold of linen over it. The ear should be assisted by the stethoscope, in order that the patient may be saved the unpleasant consequences of immediate contact with the ear, as well as because, by the aid of the instrument, it will be easier to limit the sound, and reach more precisely the point at which it is most distinct, by pressing more or less on the abdominal walls. By the stethoscope, also, we can much more readily distinguish the souffle and pulsations of the heart from other sounds caused by borborygmi, muscular contraction of the intestines, &c.; and thus avoid the friction of the ear upon the linen, which is produced at each inspiration, and which renders the sensations more confused.

§ 6. *End of the Sixth Month.*

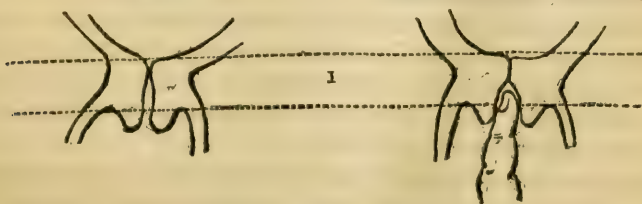
Development of the Fœtus.—At six months, the period of legal liability, the fœtus, from the occiput to the coccyx, measures from eight to nine inches; the skin is covered with a very apparent down, and white plates of sebaceous mucus. The hair becomes darker, the eyelids are opaque, and the pupil very much dilated; the large intestine exhibits crimplings, and is filled with a brownish meconium.

At the end of the sixth month, the fundus of the uterus extends above the umbilicus in a primipara; it has, however, scarcely reached the umbilical region in a female who has already borne children, either in consequence of the sinking down of the womb upon itself, or because the relaxed abdominal walls permit it to incline more forward. Moreover, in both, it inclines a little more to the right and in front than at the fifth month; the vagina is still elongated, and the bladder begins to rise above the superior strait.

B. Form.—The body of the uterus becomes more and more spherical, and represents tolerably well a balloon, the neck of which is formed by the cervix; the thickness of the walls is somewhat less than in the unimpregnated state.

(Fig. 32.)
Primipara.

(Fig. 33.)
Female who has borne Children.



C. *Length*.—Measured from the internal orifice to the summit of the organ, the body of the uterus is nearly six inches; the entire neck twelve to fifteen lines; while the whole length of the organ is seven inches and three lines.

D. *Changes in the Inferior Portion of the Uterus*.—The vaginal portion continues to soften and diminish in length; the orifice, also, opens more and more. The first phalanx may sometimes be introduced in primiparæ, which, however, is rare. In women who have had children, the finger will penetrate to one half the neck; it will occasionally even reach the internal orifice, but will not pass beyond it.

E. *Active and Passive Motion of the Fœtus*.—The active motion is more manifest; the abdominal and vaginal ballottement is perceived much more readily, and at this period the fœtus has acquired sufficient weight and mobility to fall back upon the finger after having been removed by it from the inferior portion of the uterus.

F. *Auscultation*.—The souffle and pulsations of the heart are heard still more distinctly, particularly the latter.

§ 7. *End of the Seventh Month.*

A. *Development of the Fœtus*.—At seven months, the fœtus measures, from the occiput to the coccyx, from nine to ten inches; the skin is less red; the cellular tissue is furnished with adipose matter; and the nails are broad. The iris becomes formed; it constitutes at first, according to M. Velpeau, a simple ring, which increases in a concentric manner, and ultimately leaves an opening called the pupil. Others suppose that the iris is formed by the rupture of the pupillary membrane. *The umbilicus is still below the middle portion of the fœtus*; the testicles leave the renal region, and approach the inguinal ring.

B. *Position of the Uterus*.—At this period, the fundus of the womb is between the umbilicus and epigastric region, and its inclination to the right, until now quite slight, becomes very evident. It is frequently asked why this inclination should be so often to the right, and so rarely to the left. Desormeaux supposed that it was occasioned by the repletion of the iliac portion of the colon, constipation being a condition which almost always accompanies pregnancy. But M. P. Dubois does not admit the truth of this proposition, predicating his objection upon the fact that the cœcum on the right, which is equally liable to distension, antagonizes the influence of the colon, which is on the left. Other authors have thought that it was owing to the more frequent use of the right arm; this explanation appears to me to be without foundation. Finally, it has been referred to the habit of lying down on the right side; this habit, if it were general, would undoubtedly explain the cause of the inclination; but this right obliquity of the womb is observed equally often in women who rest on their left, as in those who from choice lay on the right side.

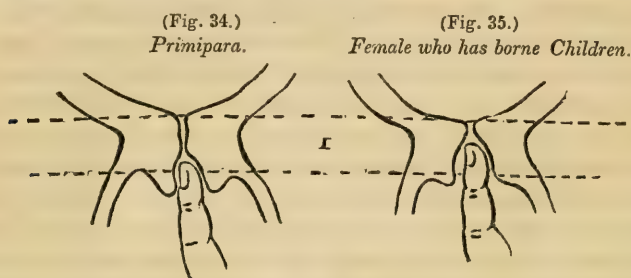
The opinion of Madame Boivin appears to be the most reasonable. According to this skilful sage-femme, the right round ligament, strong

er than the left, draws the fundus of the womb to the right side ; indeed, it may be said that she has mistaken the cause for the effect, and that, if the round ligament of the right side acquires more strength, it is because it has a greater weight to sustain. In a word, the true cause of this obliquity is not well understood.

As the uterus rises and closes up more and more the superior strait, the bladder is pushed above this strait, and the tumified urethra becomes situated behind the symphysis pubis, a circumstance which at once explains why, in some instances, the introduction of the catheter can be accomplished only by means of a flexible and sufficiently long sound, and not by the ordinary female instrument. I should likewise mention here certain changes which can only be observed after death : thus, the peritoneum will be found pushed upward, and its folds or posterior and anterior ligaments completely effaced ; the broad ligaments are still apparent, but, like the fallopian tubes and ovaries, they rest against the two sides of the uterus.

Form.—The body of the uterus loses its spherical form ; it becomes ovoid, and broader at its superior portion ; its walls are thinner than at full term.

Length.—From the internal orifice to the fundus of the organ, the length is ten inches in a primipara ; and if to this be added twelve to fifteen lines for the neck, the entire length of the uterus will be eleven inches and a few lines.



C. Changes in the Neck.—The neck is carried far backward, and to the left ; it is sometimes difficult to reach, and measures in its whole length twelve to fifteen lines ; this diminution is effected at the expense of the vaginal portion only, which has become larger, and, in primiparæ, measures but a few lines ; it is even at this period almost completely effaced in women who have had children. In the former, the vaginal orifice will allow the finger to penetrate sometimes to one half of the neck ; in the latter, the finger often reaches to the internal orifice, into which, indeed, it may enter provided the woman has had many children.

D. Active and Passive Motion of the Child.—The movements of the fœtus are now much more energetic, and sometimes occasion a painful sensation. These movements are manifest to the view ; the ballottement is also very easily perceived.

E. Auscultation.—The signs furnished by the uterine and fœtal circulation are recognised with great facility.

§ 8. *End of the Eighth Month.*

A. *Development of the Fœtus.*—At the end of the eighth month the fœtus measures from ten to eleven inches; its skin, covered with down, is thicker and less smooth; the sebaceous material is abundant; the inferior maxillary bone, at first very short, is, at this period, nearly as long as the superior. The nails are much firmer, and the testicles pass through the ring to the scrotum.

B. *Situation of the Uterus.*—The fundus of the womb is in the epigastric region, inclined to the right, and in front.

C. *Form of the Uterus.*—Its form is nearly the same as it is at the seventh month, which it preserves until the completion of pregnancy.

D. *Length.*—The whole length of the uterus varies from twelve to fourteen inches; the entire length of the neck being included in this measurement, gives from ten to twelve lines; measured at its fundus, the body of the uterus, in its transverse diameter, affords eight inches, and in its antero-posterior seven inches and a half.

E. *Changes in the Neck.*—I have shown that, up to this time, the vaginal portion of the neck alone became changed from month to month, both in its consistence and form, and especially in its length. We have observed it successively at each period lose some lines of its length, while the portion of the neck above the vagina remained unaltered. At the end of the eighth month the vaginal neck is almost entirely effaced; however, in primiparæ, the lips still measure a few lines. It is directed considerably backward and to the left, and this circumstance renders it very difficult to reach. This difficulty, however, depends more upon the ante-version of the body, which carries the neck considerably backward, than upon the height of the neck itself. In women who have borne a number of children, the vaginal orifice is so soft and open that it becomes confounded with the walls of the vagina; and the only certainty the accoucheur has that he has reached the neck is, that the finger penetrates an orifice widely open, in front of which is felt a small tubercle, which is nothing more than the rudiment of the anterior lip. This orifice is funnel-shaped, and the finger penetrates it deeply in order to pass the internal opening, which is more or less dilated.

In primiparæ, the neck, less soft and dilated, permits the finger to reach only as far as the internal orifice, which is closed.

Whether the female is a primipara, or has already borne children, the portion of the neck above the vagina does not undergo any change until this period, and often not until the eighth month and a half. It was formerly supposed that this portion contributed to the enlargement of the inferior part of the uterus from the sixth to the seventh month. M. Stoltz was the first to show that this opinion is incorrect; he has also stated that, even at term, this part is not always effaced. M. P. Dubois concurs in this opinion; and I have had occasion to notice, in women who have died at the eighth month of pregnancy, the integrity of this portion of the ute-

rine cervix. Indeed, it is a fact which any one can ascertain for himself in practising the vaginal touch. The distance which the finger has to pass, after being introduced into the external orifice, in order to reach the internal, will give exactly the length of the supra-vaginal portion, which alone remains unchanged, the lower portion being completely effaced. Besides, this part is not changed, as was formerly supposed, by a widening of the superior part of this supra-vaginal neck; but it is now ascertained that it is by the flattening of this part, by which flattening the upper and lower orifices gradually approximate, and form only one and the same opening.

It is only at this period that certain of the presumptive signs can be well examined; the vergetures in the integuments of the abdomen, the prominence of the umbilicus, and the coloration of the linea alba; but it must be remembered that these signs, which, at a less advanced period, have but little value, possess no more at the eighth month, when, indeed, we have so many others that are really important.

F. The *vergetures*, species of lozenge-shaped separations in the mucous bodies of the skin, are seen through the epidermis with a bluish colour; they are more abundant in primiparæ, and in women whose abdominal walls are rigid; they extend occasionally to the superior portion of the thighs; and sometimes they are entirely wanting when there is pregnancy, and may manifest themselves in cases in which the abdomen is distended by any other cause than a fœtus. It is the same with regard to the *prominence of the umbilicus* and the *coloration of the linea alba*. This latter sign seems, however, to be more common in cases of pregnancy.

G. *Active and Passive Motion of the Child*.—The active movements are more and more energetic; they may, indeed, at this period, when the fœtus begins to be more fixed in utero, serve to determine what the presentation and position will be at the time of labour. Thus, in the presentation of the vertex, the female experiences a heavy pressure below, together with slight movements, executed, as it were, by friction, and determined by the head; she feels also at the fundus of the womb slight motions, produced by the abdominal extremities of the fœtus. The contrary is observed in the opposite presentation. If these motions should be felt on the left side, the back is ordinarily on the right; if on the right, the back will be on the left.

H. *Passive Motion*.—The abdominal ballottement is perceived with as much facility as at the end of the seventh month; such, however, is not the case with the vaginal ballottement. This sensation begins to be more obscure; the finger applied to the inferior portion of the uterus is sensible that it raises a heavy body, which rests on this segment, but it feels also that the body does not quit this part. In fine, the development of the fœtus proceeds, during the latter period of gestation, much more rapidly than that of the uterus itself; and it now finds itself in a narrow compass, and, consequently, it is more difficult to displace it. Although, as I have already remark-

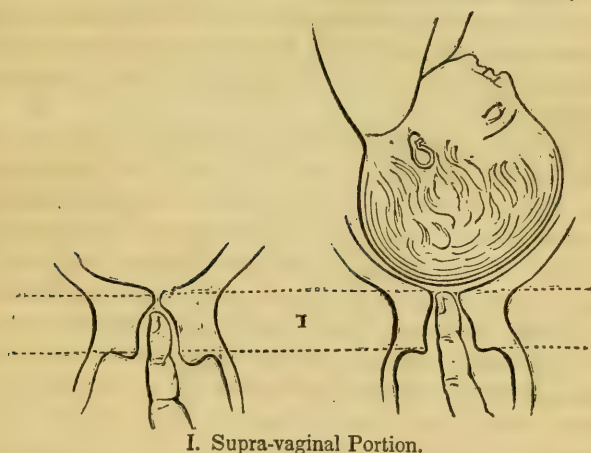
ed, the ballottement is most readily felt when the head presents, yet at this period the head is ordinarily too stationary at the upper strait to allow of much mobility.

I. *Auscultation.—Diagnosis of Presentations and Positions.*—The souffle is very easily perceived; so also are the pulsations of the foetal heart, which, in consequence of the immobility of the foetus at this period, will enable us to ascertain in advance the particular presentation and position which the foetus will occupy at the time of labour. Long before this period, it is true, we can arrive pretty accurately at this diagnosis, but, in consequence of the greater mobility of the foetus, it may change its situation before the expiration of the full term. It is not, therefore, until the eighth or ninth month that it is

(Fig. 36.)

Primipara.

(Fig. 37.)

Female who has borne children.

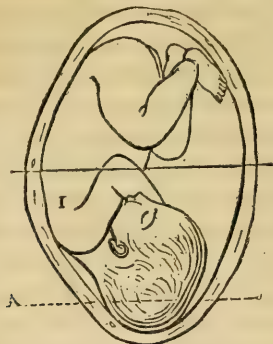
I. Supra-vaginal Portion.

possible to ascertain in advance what will be the presentation and position of the foetus at labour; and, indeed, it must be admitted that, even at this period, the foetus sometimes is so mobile as to be able to change its position by presenting the feet instead of the head, and *vice versa*. This is observed particularly in women who have had many children; in them the uterus is so distensible that the foetus can place its longest diameter, which measures eleven inches, in relation with the transverse diameter of the womb, which measures only eight inches. Without this yielding of the uterine walls, the foetus could also change its position by executing a movement of rotation, which brings, in the presentation of the vertex, for example, the occiput to the right, when it was originally at the left.

I have already stated that the pulsations of the heart are most distinctly heard at the point of the abdomen to which the posterior precordial region of the foetus corresponds. This being recollected, it will be easy for a practised ear, as soon as the part of the abdomen at which the sound is best heard is well determined, to ascertain how the back of the foetus is situated, whether to the left or the right, in front or posteriorly, that is to say, what is the exact position, and to what height of the abdomen the precordial region is found to correspond; a circumstance which will serve to estab-

lish the presentation. In order to discover the presentation, it will be necessary to draw a line, which shall divide the abdomen transversely into two equal parts; and whenever the summum of inten-

(Fig. 38.)



A. On a level with the upper Strait.

sity of the pulsations is heard below this line (I), we infer that there is a presentation of the head; and when, on the contrary, it is heard above the line, a presentation of the pelvic extremity.

(Fig. 39.)



A. Superior Strait.

I have often been enabled to distinguish, in this manner, the presentations of the lower extremity from those of the head. Is it possible to ascertain with equal certainty a presentation of the trunk? I think not. In some cases of this latter presentation, which I could not know until after delivery, I was led to suppose, from the results furnished by auscultation during pregnancy, that there was pres-

(Fig. 40.)



A. Superior Strait.

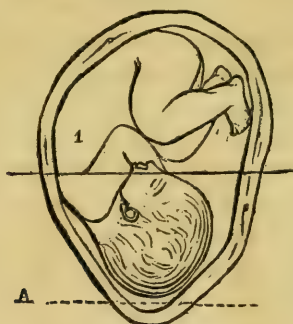
entation of the vertex; for the intensity of the pulsations was observed below the transverse line, either to the left or right and in front (fig. 40), and yet the presentation of the head did not exist.

If, in other instances, my diagnosis proved correct, I attribute it rather to the signs furnished by abdominal percussion and the form of the uterus, than to those derived from auscultation.

Moreover, although it is frequently possible to ascertain the presentations, yet we must be guarded against certain circumstances which might lead us into error.

Thus, in some women, the head may remain at the superior strait, the inferior segment of the uterus not passing below this strait, and then the pulsations of the heart will be heard with more force above the transverse line, and we may be induced to suppose there is a pelvic presentation, when, in fact, it is the head. I have committed more than one error of this kind, which, however, the vaginal touch enabled me to correct before the labour commenced.

(Fig. 41.)



A. Superior Strait.

So, likewise, the pelvic extremity, in breech presentations, may be considerably descended below the strait (fig. 42), which is more rare than for the head, and thus we may be imposed upon and in-

(Fig. 42.)



fer a presentation of the vertex, because the intensity of the pulsations is below the line (1).

As to the position, I am of opinion that, in the great majority of cases, we can ascertain whether the back is to the left or to the

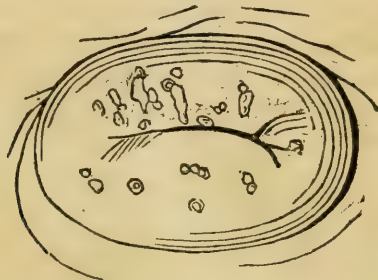
right. But I have been less successful when I have endeavoured to distinguish a left or right posterior from a left or right anterior position, and I think all correct observers have arrived at the same conclusion.

Be it as it may, auscultation is nevertheless, under these circumstances, of great value when united to other signs, which may throw light on the diagnosis; for the important point is, especially in cases where it becomes necessary to operate, and where the other signs will not enable us to judge of the position, to know to which side the back of the fœtus corresponds; now I have already shown that this latter result is readily obtained; and then, whether the head or pelvic extremity presents, the hand introduced into the womb should have its palmar surface corresponding with the anterior portion of the fœtus.

It is sometimes also possible to detect the presence of twins in utero; but it has always appeared to me extremely difficult to ascertain their presentation and position. (See *Compound Pregnancy*.)

K. Changes in the Adjoining Parts.—At this period, the diaphragm, pushed upward by the uterus and intestines, impedes respiration. By its weight, the uterus also obstructs the venous circulation, and causes œdema in the labia majora and inferior extremities. Constipation is likewise common at this time. The vagina secretes abundant mucosities, and sometimes on the neck of the womb and mucous membrane of the vagina we can feel small elevations, which are abnormal developments of the mucous follicles.

(Fig. 43.)



The bladder is pushed still higher up; and the urethra forms a prominence at the superior part of the vagina. The pressure experienced by the body and neck of the bladder occasions a kind of tenesmus, and a frequent but illusory desire to pass water.

§ 9. End of the Ninth Month.

A. Position of the Uterus.—Having arrived at the term of its development, the uterus does not ascend after the end of the eighth month; sometimes, even, it descends, especially in presentations of the head; for this portion, pushing before it the inferior segment of the uterus, engages more or less in the superior strait, and thus permits the womb to descend.

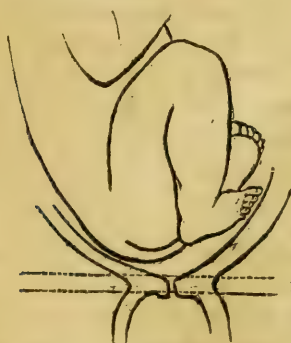
This circumstance shortens somewhat the vagina; and the other relations of the uterus are the same as at the eighth month. It corresponds below to the sacro-vertebral prominence; above, to the anterior abdominal wall, mesentery, and intestines; in front, to the anterior abdominal wall, to the body and neck of the bladder; on the left, to the iliac vessels, psoas muscle, and iliac portion of the colon; on the right, to the iliac vessels, psoas muscle, cæcum, and abdominal wall; it is, moreover, considerably inclined to the right, and in front.

B. Form.—Its form is the same as at the seventh and eighth month.

C. Length.—The length is the same as at the eighth month; the long diameter measures from a foot to fourteen inches; the transverse diameter, eight inches; and the antero-posterior, seven inches and six lines.

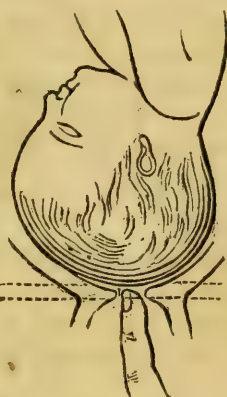
D. Changes in the Neck.—In women who have had children, there is no longer any neck; the internal and external orifices become confounded, and are dilated so as to allow the finger to feel, through the membranes, the presenting part of the fœtus. In primiparæ, however, the supra-vaginal portion still preserves a few lines in length, which do not become effaced until after labour has commenced. The vaginal portion is alone completely effaced, and a very slight thickness of the tissues separates the two orifices; the external is open, but the finger cannot enter the internal. In both, the vaginal opening is capacious, and is directed backward and to the left, which renders it difficult to be reached and distinguished, notwithstanding the shortening of the vagina.

(Fig. 44.)
Primipara.



(Fig. 45.)

Woman who has had Children.



I. Supra-vaginal Portion.

E. Thickness.—The thickness of the uterine walls is less at the full term of gestation than in the unimpregnated state, especially at the inferior portion; except at the insertion of the placenta, where it is as thick. This thinness of the walls may be partial, and the more evident, according to the number of children borne by the female; and I have seen at La Clinique several women in whom

this disposition was so manifest, together with great suppleness of the abdominal walls, that it became easy, by means of an abdominal examination, to ascertain all the relations of the fœtus with the womb, and also to observe that the fœtus enjoyed extreme mobility; but I have never met with this thinness of the walls, and this mobility so marked, as in the two women whose cases I shall report in the article—*Version through the Abdominal Walls*.

F. *Weight*.—The weight of the empty uterus, at the full term of gestation, is about two pounds.

G. *Active and Passive Motion*.—The active motion of the child has still increased in energy since the end of the eighth month; for the fœtus has acquired additional development, although the uterus itself has not increased in its dimensions. In consequence of this growth of the fœtus, and of the constraint it experiences, the ballottement, or perception of the active and passive motions, is more obscure than at the eighth month.

H. *Auscultation*.—This furnishes nothing that cannot be perceived with equal facility at the eighth month.

The development acquired by the vascular system of the uterus determines, in the whole organ and in its annexæ, an increase of heat, which is very manifest in the vagina. This increase in the circulation furnishes also to the vagina the materials of an abundant mucous secretion, which has often been mistaken for a symptom of a disease of a doubtful nature.

But we must not attribute to the same influence the enlarged veins of the vagina and *labia majora*, for these are caused by the obstruction which the weight of the uterus occasions in the venous circulation.

I. *Changes in the Neighbouring Parts*.—At this period constipation is very obstinate, and the vesical tenesmus quite marked. Sometimes, however, the bladder is more compressed at its superior part, and is made to project into the upper portion of the vagina. I have witnessed the truth of this fact, which M. Velpeau also has frequently noted. The diaphragm is somewhat lower, and respiration more easy.

SYNOPSIS OF THE SIGNS BY WHICH THE PERIOD OF PREGNANCY MAY BE ASCERTAINED.

End of 3d month. { The fundus of the uterus does not pass the pubes.
The entire neck is about twenty-two lines in length. It is less in a woman who has had children. The uterine souffle is sometimes heard; rarely, however.

End of 4th month. { The fundus is between the pubes and umbilicus.
The uterine souffle and pulsations of the fetal heart are sometimes perceived at this period, as also the active and passive movements of the foetus.

End of 5th month. { The fundus is very near the umbilicus.
The neck is fifteen to eighteen lines in length; it is shorter in women who have borne children. The active and passive movements of the foetus, as also the pulsation of the heart and uterine souffle, are perceived.

End of 6th month. { The fundus is above the umbilicus.
The pulsations of the fetal heart and active movements are always perceived; ordinarily, the souffle and the passive movements.

End of 7th month. { The fundus is situated between the umbilicus and epigastric region.
The neck is from twelve to fifteen lines in length, shorter in women who have had children. The souffle, the pulsations of the heart, the active and passive movements, are very manifest.

End of 8th month. { The fundus is in the epigastric region.
The neck does not measure more than ten to twelve lines; it is shorter in women who have had children.

End of 9th month. { The fundus is in the epigastric region.
The neck measures only a few lines; it is sometimes completely effaced in women who have had many children.

The supra-vaginal portion has not undergone any modifications.
The vaginal portion in a primipara has become larger; it is slightly softened; its orifice is closed and rounded; in a female who has had children, it is soft; its orifice is irregular and slightly open.

The supra-vaginal portion is yet unchanged.
The vaginal portion in a primipara becomes higher, inclines backward, and slightly to the left, and becomes more and more soft; the orifice is open; in a woman who has had children, it presents the same changes, but it is softer, and permits the introduction of the first phalanx.

The supra-vaginal portion is yet unchanged.
The vaginal portion in a primipara becomes more and more soft; the orifice, turned more to the left, is sometimes sufficiently open to permit the introduction of the first phalanx; in a woman who has had children, it exhibits the same changes; but the finger may sometimes reach as far as the orifice, which, however, it cannot pass.

The supra-vaginal portion is unchanged.
The vaginal portion in a primipara is very soft, and still preserves a few lines of length; the orifice opens, and permits the introduction of the finger to one half of the neck; in a woman who has had children, it is effaced; the orifice is widely open; the finger penetrates as far as the internal orifice, into which it can pass if the female has had several children.

The supra-vaginal portion begins to diminish in height.
The vaginal portion in a primipara is very difficult to reach; it is almost effaced; the finger penetrates to the internal orifice, which it cannot pass; in a woman who has had children, it is also very difficult to reach; often entirely effaced; the finger sometimes feels the foetus through the two orifices.

The supra-vaginal portion in a primipara still preserves a few lines, which are not effaced until the first pains of labour; sometimes it is entirely effaced; the internal orifice is closed; in a woman who has had children, it is completely effaced; the internal orifice, which is open, permits the finger to feel the presenting part of the foetus.
The vaginal portion, ordinarily, does not exist.

§ 10. *The Human Ovum at Term.*

In the human species, the name of ovum is given to a sort of membranous vesicle, which is composed of the fœtus, several membranous tunics which envelop it, or organs of protection; and of the umbilical cord and placenta, or organs of communication.

1. *Envelopes of the Ovum.*

The protective organs are composed of three perfectly distinct membranes, the *caduca*, *chorion*, and *amnios*.

A. The *caduca*, or external membrane of the ovum, at the full period of pregnancy is of a grayish colour, and covers the whole of the ovum, except at the point at which the ovum, in proportion as it grows, forces it to double or reflect on itself. At this point the ovule is in immediate contact with the walls of the uterus. This membrane is composed of two portions, the external of which is termed the external or uterine *caduca*, while the internal, or the reflected portion of the ovule, has received the name of the internal or reflected *caduca*, or *epichorion*. This membrane bears the same relations to the ovule that the pleura does to the lungs.

Of these two portions, the first, or external, preserves, in its development, a tolerable thickness; the other, or internal, extremely thin, adheres firmly to the first; the slight exhalation of a serous fluid which filled its cavity, and which M. Breschet termed *hydroperion*, has then completely disappeared.

The organization of the *caduca* appears in every respect to be similar to the false membranes; M. Velpeau denies that it is organized, and calls it the *anhiste*; other anatomists, on the contrary, maintain that they have discovered vessels in it. I am aware that, in placing this membrane on a plate of glass, and examining it through the light, there will be seen species of arborizations; and I have been enabled, before it became dry, to cause with the nail blood to circulate, which appeared to me to be contained in it. But I cannot, however, affirm that this blood did not reach the membrane by imbibition, and that it was really contained in vessels.

The surface of the *caduca* is unequal and porous; it is always met with during pregnancy, and the uses of it are to fix the ovum upon some one point of the uterine cavity, and to prevent its being carried without.

B. *Chorion*.—The chorion, a middle envelope of the ovum, is a thin, transparent membrane, the texture of which very much resembles a serous tissue.

Notwithstanding the opinion of certain anatomists, no one has yet succeeded in demonstrating the existence of either vessels or nerves in this membrane.

At the placenta, the chorion furnishes the umbilical vessels a species of sheath, which accompanies them in their whole extent; it forms, with the integuments of the fœtus, a line of demarcation, which indicates the point at which the cord should separate from the child.

The functions of the chorion are to protect the embryo, and contribute to the formation of the placenta, and the exhalation of the fluids contained in the ovum.

Its external surface is in relation with the *caduca reflexa*, and its internal with the *amnios*.

C. *Amnios*.—The *amnios*, or internal membrane of the ovum, affords an immediate envelope to the umbilical cord, *fœtus*, and to the liquid in which this latter is enveloped.

According to the opinion of the ancients, the *amnios* is continuous with the integuments of the *fœtus*: this opinion, which was abandoned for a long time, was revived, about twenty years since, by an Italian professor, M. Mondini, of Bologna; and quite recently M. Breschet has stated, in fact, that the *amnios*, without being continuous with the epidermis, furnishes to the *fœtus* a covering, the separation of which is effected by the desquamation which is observed in the child during the first few weeks of its life. This opinion does not appear to me to be sufficiently established.

At the completion of pregnancy, the *amnios* presents an internal surface, which is smooth and polished; separated from the *fœtus* by the amniotic liquor, its external surface is in relation with the chorion, to which it adheres rather closely, near the insertion of the placenta, and in the whole extent of the umbilical cord; but in the rest of its surface this adhesion is much less, and it yields readily; also, at the end of pregnancy, there is collected between the two membranes a certain quantity of fluid, which accoucheurs have denominated the *false waters*.

The tissue of the *amnios*, although very similar to that of the chorion, is, however, of a more dense texture; neither vessels nor nerves have yet been seen in it. But in this membrane, as well as in the preceding, we can, by microscopic analysis, perceive certain porosities, through which the water exhaled by the uterine capillaries passes around the *fœtus* by a simple endosmose.

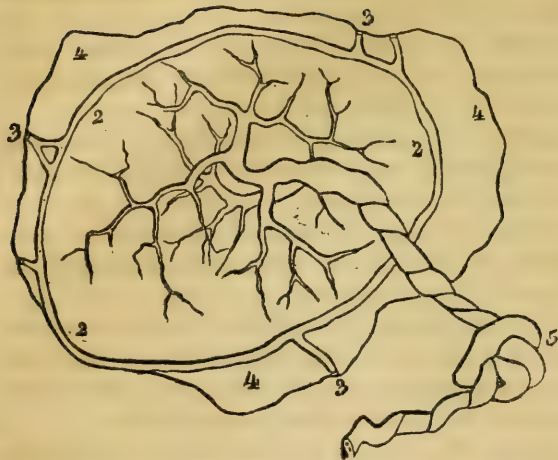
2. *Placenta*.

The placenta is a soft, spongy, vascular mass, resembling a cake (*gâteau*).

The round form which it ordinarily assumes varies sometimes, in consequence of the insertion of the umbilical cord. This insertion, which is most usually in the centre, may also take place on one of the borders of the placenta.

When the insertion is in the centre, the placenta is more or less circular, and resembles in form a mushroom; but when the insertion is near the border or circumference, the organ assumes an elliptical shape, which gives it more or less the appearance of a kidney. Occasionally, instead of being flat, and of an equal size, it is much thicker in the centre, and becomes thinner towards the borders, so as to present the form of a cone; at other times, instead of forming but one mass, it is divided into several lobes. This disposition may give rise to serious accidents at the time of delivery.

(Fig. 46.)



(Fig. 47.)



- | | |
|---|------------------------------|
| 1. Placenta. | 4. Remains of the Membranes. |
| 2. Coronary Sinus. | 5. Knot in the Cord. |
| 3. Uterine Sinus, anastomosing with the Coronary Sinus. | |

The ordinary diameter of the placenta is from six to seven inches; but these dimensions vary, and sometimes the placenta measures nine inches in length by six in width. In these cases, the length is increased at the expense of the thickness, which, in its normal state, is about an inch to an inch and a half, and it is always greater at the insertion of the umbilical cord.

It is of a grayish-red colour, and this is more marked, depending upon the greater or less engorgement of the organ with blood.

The placenta presents two surfaces, one external or uterine, the other internal or foetal. The external surface is more or less convex in proportion to the concavity of the uterus, and adheres to the walls of this organ. At the time of delivery, it exhibits fissures, which result from the separation of the cotyledons composing the organ; but while the placenta is still adhering to the womb, these fissures are concealed by a cellulo-vascular membrane, which covers the whole external surface, and renders it perfectly uniform.

The internal or foetal surface is concave, firmer, more smooth and polished than the external; on it is remarked a vascular plexus, from which arise the vessels of the umbilical cord. This surface is covered by the amnios and chorion. The circumference of the placenta is in relation with the fold of the *caduca*; at this part there is observed a vascular circle called the *coronary sinus of the placenta*.—(See fig. 46.) These vessels communicate on the one part with the uterus, and on the other with the placenta, which they penetrate through the fissures which separate the cotyledons.

The placenta is formed by an agglomeration of lobes or cotyledons separated by fissures, which are termed *placental sinuses*, and into which passes the cellulo-vascular membrane mentioned above. Authors are wrong in denying the existence of these sinuses; after the expulsion of the placenta, it is easy to distinguish, between each cotyledon, the inter-lobular membrane, especially where the cotyledons have not been separated by uterine contraction. It is this

membrane which, in cases of injection, prevents its passage from one cōtyledon to another.

The placenta is composed of blood-vessels, cellular tissue, and whitish filaments, which appear to be an expansion of the chorion, and which have been mistaken by some anatomists for nerves.

The placenta may be inserted on any point of the uterine cavity; but it is most commonly found near the orifice of one or other of the fallopian tubes; it is likewise sometimes attached to the cervix; but to whatever point it becomes fixed, it is always that particular portion of the uterus which was in immediate contact with the ovule, after the reflexion of the *caduca*.

The placenta adheres to the uterus by cellular tissue more or less dense and compact, which is ordinarily broken up by the contractions of the uterus; at other times, on the contrary, this adhesion is so firm that it requires the interference of the hand.

The placenta is frequently the seat of morbid alterations, such as ramollissement, scirrhus, cartilaginous structure, partial ossification, formation of cysts, &c., &c., which, when they present themselves to any extent, are very apt to interfere with the development of the fœtus, and occasion premature expulsion.

The functions of the placenta are to contribute to the nourishment and respiration of the fœtus.

In cases of multiple pregnancy, there is usually a placenta to each fœtus, and they are intimately united together; it is only in rare cases that but one placenta exists.

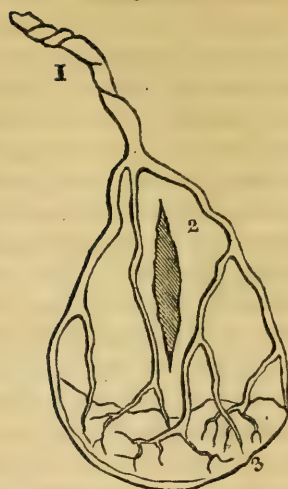
Umbilical Cord.

The umbilical cord is a long, cylindrical, and flexible string, which unites the fœtus to the placenta. Its length is extremely variable; it usually measures from eighteen to twenty-four inches; and instances are mentioned in which it equalled five feet in extent. Its thickness is about that of the little finger, sometimes much larger. Mauriceau knew it to equal the arm of the infant. At other times it is so small that the vessels which it contains are not sufficient to maintain the life of the fœtus. Rœderer cites an example of this kind.

The increase or diminution in the volume of the umbilical cord depends frequently on a fluid contained in the cellular tissue, and which is called the gelatine of Wharton; but when this increase is more sensible near its fœtal insertion, it may arise from the presence of a portion of the intestine in the sheath of the cord, and it is of great importance to ascertain this fact before placing a ligature around it.

The manner in which the vessels of the cord comport with each other has a singular influence on its solidity, whether, for example, they separate or unite before they become inserted into the placenta. I obtained at La Clinique a placenta in which the vessels of the cord were inserted into the membranes. M. Voillemier, interne of La Clinique, has made a preparation of one, which likewise presented this arrangement (fig. 48).

(Fig. 48.)



1. Cord inserted into the membranes.
2. Opening of the membranes through which the fœtus has passed.
3. Fœtal portion of the placenta.

If, in this case, the rupture of the membranes should take place near one of the three vessels, it might lacerate one of them, and occasion a very serious hemorrhage. But this insertion, as I have already remarked, most usually takes place in the centre of the placenta. The fœtal insertion occurs at the umbilicus, near which there is an annular projection, which indicates very precisely the place at which the separation of the cord is effected.

The cord is composed of an umbilical vein and two umbilical arteries; the latter twist round the former, and give it the appearance of a cable; of very loose cellular tissue, pervious to fluids, which explains why it is the cord becomes so easily infiltrated; of the gelatine of Wharton, a species of viscid liquid, which contributes to increase the volume of the cord; and, finally, it is composed of the urachus, and of a sheath formed by the prolongation of the chorion and amnios.

Enlargements of the vein, irregularities, and even knots, are sometimes met with in the umbilical cord. When these anomalies are slight, they are unimportant; but if, on the contrary, they are considerable, they often occasion abortion.

The cord serves for the transmission of the circulating fluid from the placenta to the fœtus, and *vice versâ*.

4. Amniotic Liquor.

The amniotic liquor is contained within the amnios membrane, and the fœtus and umbilical cord float in the midst of it during the whole period of gestation.

At the full period of pregnancy, the quantity of this fluid is from sixteen to twenty-four ounces. But this valuation is unimportant, for the quantity of the amniotic liquid is very variable, and almost always in an inverse ratio to the force and size of the fœtus, and the strength of the mother. It presents a milky turbid-

ness, preserves a greenish or lemon colour, and is denser than distilled water. It contains a flocculent material of a greenish white, and appears to be at the same time both acid and alkaline, for it reddens the tincture of turnsol, and changes the sirup of violet to green; it has a slightly saltish taste, and contains (according to Vauquelin and Buniva) ninety-eight parts of water, and two parts of albumen, sulphate of soda, and lime. The origin of it is obscure; it has been pretended successively that it was formed from the perspiration, the urine, the saliva of the fœtus, from the gelatine of Warthon, &c., &c.; but none of these views are sufficiently established. It is now generally supposed that the amniotic fluid is produced by an exhalation from the internal surface of the membranes of the ovum.

The liquor amnii serves to nourish the fœtus, and protect it against the effects of concussion and the violence of uterine contraction; it favours the movements of the fœtus, prevents the adhesion of the limbs to each other or to the trunk, when the epidermis is not yet formed or covered with sebaceous matter; it breaks the violence of shocks produced by the movements of the fœtus against the uterine walls, and contributes to the development of the uterus; it facilitates the dilatation of the cervix uteri during labour; and, finally, lubricates the maternal organs, and thus renders the passage of the fœtus more easy at the moment of birth.

§ 11. *The Fœtus at Term.*

The fœtus, at the full period of utero-gestation, differs from one of eight months only in its dimensions. Measured from the head to the breech, it is from eleven to twelve inches; from the head to

(Fig. 49.)



the feet, from seventeen to twenty inches. Its weight is usually between six and seven pounds. Sometimes, however, it weighs twelve pounds. I delivered one at La Clinique weighing nine pounds; but this is rare, and we must not credit the stories of au-

thors who state they have seen infants weighing twenty, twenty-four, and thirty pounds.

The root of the cord is elevated, but it does not correspond to the centre of the body of the fœtus.

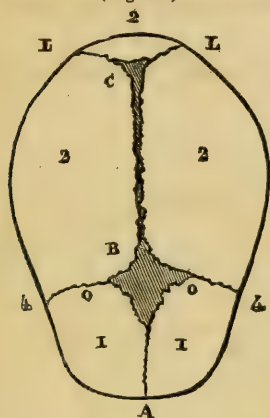
The bis-acromial diameter A B, extending from one shoulder to the other (fig. 49), measures about four inches, but in consequence of the compression the parts undergo in passing the superior strait, this diameter is reducible to three inches six lines.

The bis-iliac diameter B I, which represents the width of the pelvic extremity, presents the same dimensions as the preceding, but it is somewhat more reducible; thus, at the time of its passage through the pelvis, it ordinarily does not measure more than from three inches to three inches four lines. This difference is owing to the fact that the fœtal pelvis, which is narrow, is covered with soft parts, pretty thick, to be sure, but which readily yield; while the points between which the bis-acromial diameter is measured are scarcely covered at all by soft parts, and the only diminution caused in this diameter is in consequence of the compression of the chest.

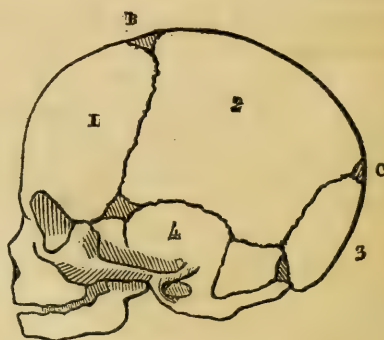
Head of the Fœtus at Term.

But of all the parts of the fœtus, the head merits most attention; it is the largest, and that which most generally presents; it is of an ovoid shape, and consists of the cranium and face.

(Fig. 50.)



(Fig. 51.)



The cranium is formed by the union of several bones; the os frontis (1), divided into two parts; the two parietalia (2); the occiput (3); and two ossa tempora (4). The bones of the face are, the two superior maxillary, inferior maxillary, and malar bones, to which must be added the inferior portion of the frontal bone.

The bones of the cranium are separated by membranous spaces, more or less extensive, called sutures and fontanelles. The knowledge of these parts is of great importance, for they serve to establish the diagnosis of the presentation of the head, and also that of its positions.

A. Sutures.—The antero-posterior or sagittal suture (A B C)

extends from the root of the nose to the point of the occiput; it separates in front the two portions of the os frontis, and in the middle the two parietal bones. In front, this suture receives on each side the two fronto-parietal sutures (O), which form lines of demarcation between the frontal and parietal bones.

B. Anterior Fontanelle.—At the point of crossing of these four branches of sutures, the two extremities of the sagittal suture and the two fronto-parietal branches, there is a membranous, broad, quadrilateral space, called the anterior fontanelle or bregma (B); on its circumference there are four bony angles formed by the parietal and frontal bones.

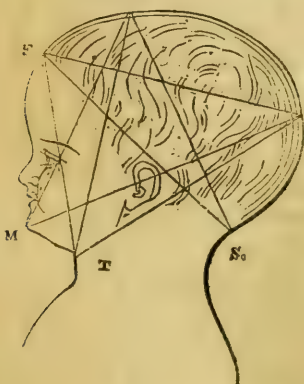
C. Posterior Fontanelle.—The sagittal suture receives at its posterior extremity the two branches of the lambdoidal suture (L), which separate the occiput from the parietal bones, and these three branches of suture constitute, by their union, the posterior (E) or occipital fontanelle, less open than the preceding; it is triangular, and presents three bony angles.

D. Temporal Fontanelle.—Two other fontanelles, situated one on the right and the other on the left, at the junction of the temporal with the parietal bone, less important than the others, yet deserve to be mentioned, for they enable us to arrive at accurate diagnosis in the inclined presentations of the head. (See *Varieties of Presentation*.)

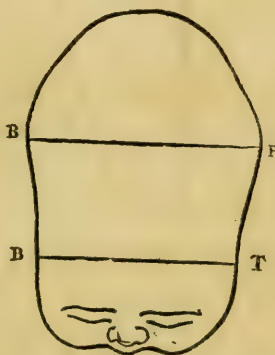
These sutures and fontanelles exhibit anomalies which I shall take care to note when treating of the presentations and positions of the head.

Diameters of the Head.—The principal diameters of the head are ten in number.

(Fig. 52.)



(Fig. 53.)



I shall now enumerate them in the order of their length.

Occipito-mental (O M), five inches.

Mento-bregmatic (M B),
Occipito-frontal (O F),
Trachelo-occipital (T O), } Four inches.

Sub-occipito-bregmatic (S o B), } Three inches and a half to
Trachelo-bregmatic (T B), } three inches and three fourths

Bi-parietal (B P), three inches and a quarter to three inches and a half.

Trachelo-frontal (T F),
Sub-occipito-frontal (S o F), } Three inches and two lines.

Bi-temporal (B T), two inches and a half to three inches.

It is indispensable to understand thoroughly the measurement of these various diameters; for on this measurement depends the possibility or impossibility of the descent and passage of the head in certain presentations and positions. I shall refer again to the names and dimensions of each of these diameters, when speaking particularly of their practical application. This is the only mode of impressing upon the memory these numerous points, which the comparison between the old and new measurements has rendered still more difficult to retain. Authors are in the habit of giving the names of the principal circumferences of the head, but, when the diameters are well understood, the circumferences will be readily known; to enumerate them, therefore, would crowd the memory with useless details.

Now, if we compare the diameters of the fœtus with those of the canal through which it has to pass, the largest diameter of the superior strait being four inches and a quarter to four inches and a half, and that of the inferior strait measuring about the same, it will be at once perceived that, in order that labour may be spontaneous, it will be necessary for the fœtus, at full term, to present by the head or pelvic extremity, and not by one of the points of its long diameter (E D; see fig. 49), which measures eleven inches, and which is observed to be the case in presentations of the trunk, which, with very rare exceptions, prevent spontaneous delivery. It must also be remembered, that even when the head presents, it will be necessary that its relations with the superior strait be such that the occipito-mental diameter does not occupy this strait, for this diameter of the head, measuring five inches, should it present, cannot pass. The same thing obtains with regard to the inferior strait; for the head may, after having descended, assume in the pelvic excavation an untoward position with regard to the occipito-mental diameter, which, however, is rare.*

Finally, it is necessary that the fœtus be flexible, in order to accommodate itself to the curvature of the pelvis through which it has to pass, and its conformation enables it to become readily flexed on all its surfaces. When the flexion is required to be very considerable, it is accomplished much more easily, and without danger to the fœtus, in the natural curvature of the body (the anterior); thus, when the fœtus is to be extracted, it should always be flexed in this manner.

But, in the spontaneous expulsion of the fœtus, in which flexion is never complete, it sometimes flexes forward, sometimes back-

* This diameter can present only in the presentation of the face, which is placed in the excavation in the direct mento-posterior position; and at the two straits of the pelvis, in the presentation of the pelvic extremity, after the delivery of the trunk, when the head is extended.

ward, according to the presentation and point of the pelvis which it occupies in order to render the expulsion more easy.

Thus, in presentation of the vertex, at the moment of descending it flexes forward; at the moment of expulsion it flexes backward, in order that the occiput may pass out first, an indispensable condition. In presentation of the face, it is the reverse; the head at first flexes backward at the time of its descent, then during the delivery it flexes forward, in order that the chin may be delivered first. I shall revert to these details in speaking of *spontaneous delivery*.

The articulation of the head with the first cervical vertebra, the atlas, is nearly immovable. It only permits movements of flexion. The articulation between the atlas and vertebra dentata is a *gynghimus*, which allows the movement of rotation, but which is limited to the fourth of a circle; however, this limit can be somewhat exceeded without compromising the safety of the fœtus. Madame Lachapelle cites numerous examples of this. M. P. Dubois mentioned two cases to me in which this torsion was very remarkable, and yet without injury to the child. Recently, at La Clinique, M. Dubois executed, by means of the forceps, a complete demi-tour of rotation on the head of a fœtus, in the right occipito-posterior position, and the child was in no way injured; these instances, however, constitute exceptions, and we should avoid, as far as possible, rotating the head more than the fourth of a circle, the body remaining fixed. I shall hereafter particularly insist upon these precautions.

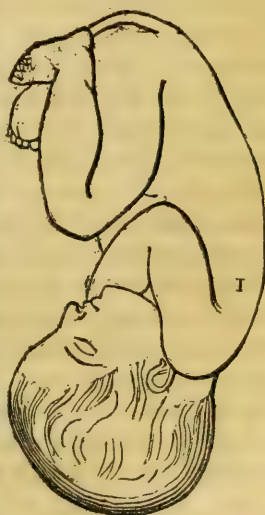
2. Attitude of the Fœtus at Term.

The fœtus is curved on its anterior surface, the chin resting on the chest, the arms applied upon the sides of the thorax, the fore-arms flexed and crossed on the front of the sternum, the feet turned on the front of the legs, the legs resting on the posterior surface of the thighs, and the thighs on the anterior surface of the abdomen. Thus flexed, the fœtus presents the form of nearly a regular ovoid, which form is determined by that of the ovum which contains the fœtus; in fact, although the ovum may not compress all the parts of the fœtus, there is yet not sufficient space in the cavity of the membranes, at an advanced period of pregnancy, for the fœtus to be extended.

Causes of Head Presentation.

Almost every point of the fœtal surface may occupy the inferior portion of the uterus, but the cephalic and pelvic extremities are those most frequently found presenting, and of these the former is most common.

(Fig. 54.)



For a long time authors have endeavoured to discover the cause of this greater frequency in head presentations; it has been supposed that the law of gravity determined this arrangement, and that the fœtus, being suspended by the umbilical cord, the cephalic extremity, more heavy than the other, was very naturally made to occupy the inferior part of the womb.

M. P. Dubois, in a memoir read at the Academy of Medicine* in 1833, has, in my judgment, triumphantly refuted this opinion, and substituted for it another resting on numerous proofs, and which it is difficult not to admit.

In a word, is it possible to believe that the fœtus is suspended by the umbilical cord, when, as early as the third month, we know the cord is already longer than the longest diameter of the cavity in which the ovum is contained? Can we admit that it is the weight of the head which occasions it to present at the superior strait, when it is easy to satisfy ourselves that the weight of the head and pelvic extremity is the same? To prove this fact, M. Dubois has repeatedly plunged, horizontally, into a quantity of water, a dead fœtus, and he has uniformly observed that all the parts of the fœtus descend with equal rapidity, and that the back is the first to reach the bottom of the base. He still farther adds, that in women who, during their pregnancy, retain the horizontal posture, the fœtus as commonly presents the head; that, before the full term, head presentations are less frequent, although, at this period, the head is really heavier than the pelvic extremity; that in fœtuses who have a tumour on the pelvic extremity, the tumour being even heavier than the head, this latter still presents;† and that, finally, in animals where the inferior portion of the organ does not correspond to the cervix, but to the fundus, head are more common than footling presentations.

Concluding, therefore, from all these facts, that the weight of the head has nothing to do with the production of this phenomenon, he has sought another explanation for the circumstance. According to M. Dubois, an instinctive determination of the fœtus itself presides over the accomplishment of this law, and this instinct is proved, during fœtal life, by that regular and almost constant succession of impressions and movements following them, which indicate that there is, during intra-uterine life, between these two functions the same connexion which is known to exist after birth. No attentive observer will deny this. And why should voluntary determinations be denied the fœtus while contained in its mother's womb, when immediately after its expulsion these determinations become manifest? Who instructs it to seize the mother's breast, and extract nourishment from it? and often, even in presentations of the face, who teaches it, before its birth, to suck the finger of the accoucheur? Who indicates to the young of the opossum, when

* *Memoirs of the Royal Academy of Medicine*, Paris, 1833, t. iii., p. 430, et t. iv., p. 475.

† Since the publication of his Memoir, M. P. Dubois has reported a case of this nature; the child was born at the Maternité, and it had on its breech a large tumour; the head, however, presented first, and very serious difficulty attended the extraction of the pelvic extremity. A similar case also occurred at La Clinique.

they are expelled from the uterus, that their organization is imperfect, and renders them unfit for external existence? who, I ask, points out to them the necessity of grafting themselves, so to speak, on the tits of their mother, in order that they may undergo in the marsupial pouch this second incubation indispensable to the perfection of their organization? What is it that leads the child and animals to the accomplishment of these acts, if it be not the same instinct which presides over the acts of their intra-uterine life, and which indicates to them to present to the mouth of the womb that portion of their body which will admit of the readiest issue?

§ 12. *Functions of the Fœtus.*

The principal functions of the fœtus are nutrition, circulation, and respiration.

Nutrition.

Of all the hypotheses advanced in reference to the nutrition of the fœtus, one only merits the attention of the accoucheur; it is that which regards the utero-placental system as alone contributing to this physiological act. I except, however, the nutrition, which goes on at the very commencement of pregnancy, and which for the first fifteen days, as I have already stated, is effected at the expense of the umbilical vesicle, and also, according to M. Velpeau, of the fluid contained in the uterine and reflected caduca.

I shall now very cursorily examine these various hypotheses, in order that I may bestow more attention on that which we deem to be the only probable one.

A. *Nutrition by the Amniotic Liquor.*—Nutrition by the amniotic liquor may occur in one of two ways: in the one, it is absorbed; in the other, it is swallowed and digested.

Is the amniotic fluid nutritive? Chemical analysis shows that it is. It contains osmazome, albumen, and salts. Direct experiment likewise proves it. Calves have been nourished for several days with nothing but this fluid; but is it right to conclude that, because this liquid is more nourishing than common water, it serves to nourish the fœtus either by ingestion or absorption? Certainly not. Again, because coloured injections thrown into the vessels of the mother colour the liquor amnii and skin of the fœtus, is this any proof that the amniotic fluid penetrates the organs in order to nourish them? By no means. If there be a species of cutaneous imbibition (and the injections have never been known to reach beyond the skin), this is no reason why there should be complete absorption and nutrition. Can we admit that this fluid is swallowed and digested, and that nutrition is thus carried on? M. Velpeau thinks not, and I certainly concur in opinion with him.

During gestation, the fœtus has its mouth closed, and, moreover, there can be no deglutition without inspiration and expiration. Acephalous children, and children that are born with the natural mucous openings imperforate, are as well developed as oth

ers; their digestive tube, as M. Velpeau has shown, contains the ordinary quantity of meconium, and even hair.

Because the liquor amnii has been found mixed with the meconium in the stomach of dead fœtuses, should we infer that this fluid has served to nourish the fœtus? Certainly not; nor are we to admit, because water is detected in the stomachs of drowned persons, that it has been swallowed.*

Besides, do we not often see fœtuses continuing alive in utero after the entire escape of the liquor amnii. M. Velpeau cites one case in which the fœtus lived for more than a month under these circumstances.

B. Nutrition through the Utero-Placental System.—Authors, in reference to this question, are divided into three classes. The first maintain that the fœtus is nourished at the expense of the maternal blood, transmitted directly from the parent to the child; such was the opinion of M. Antoine Dubois, who, admitting the existence of utero-placental vessels, thought that the radicles of these vessels communicated directly with those of the umbilical vessels, a communication which he imagined he had demonstrated by the aid of injection. But the passage of the fluid from one vessel into another after death does not prove that, during life, the same thing obtained with regard to the natural fluids. Thus, a fine injection thrown into the arteries of the abdomen will be found on the internal surface of the intestines; but it will not be inferred from this that the blood continually transudes in this manner into the alimentary canal. Injections most commonly prove nothing more than the existence of vessels, and not the course of the fluid which they contain.

Besides, even if chemistry had pointed out no marked difference between the blood of the adult and that of the fœtus, it would be difficult to admit that the maternal blood, in all its purity, without previous elaboration, could be proper to maintain life at the various periods of fœtal evolution; it should be regarded a poison rather than the element of nutrition.

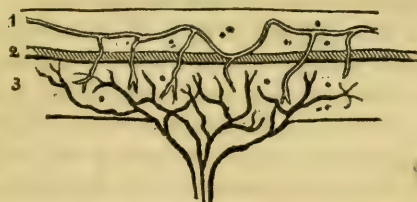
M. P. Dubois has modified the opinion of his father; he admits the existence of utero-placental vessels; but, in his opinion, these vessels are not directly continuous with the umbilical vessels; their communication is established by means of an areolar erectile tissue, situated between the placenta and uterus. I observed perfectly well this inter-utero-placental tissue in a case which I had injected at La Clinique, with M. Després. M. Dubois called my attention to the existence of this tissue in another case, injected by M. Després, where this arrangement was most conclusive. It was impossible to separate the surfaces in contact without rupturing the vessels which opened into this intermediate erectile tissue in order to

* The introduction of water and meconium into the air and digestive passages can only take place under certain circumstances. After the rupture of the membranes has permitted atmospheric air to penetrate the uterus, and when simultaneously the cord has been compressed in some one point, the fœtus, no longer receiving blood from its mother, makes an effort to execute the acts of external life, expels its meconium and urine, and attempts inspiration and suction.—Ed.

communicate directly with the sinuses of the placenta, so that the two surfaces of the uterus and placenta were filled with orifices of variable calibre; those for the arteries were smaller, while those for the veins were larger. Indeed, there were small prolongations of these vessels observed, which, passing from the uterine surface, appeared to penetrate to the cotyledons of the placenta.

But after these vessels have traversed the intermediate tissue, do they become directly continuous with the radicles of the umbilical vessels, or is there between them, in the placenta, simple contact without anastomosis? I am not prepared to say. This latter view, however, is advocated by M. Jacquemier, who admits the existence of this inter-utero-placental tissue, but who regards it only as a fold of the caduca, in which the vessels do not open, but simply pass through to meet the divisions of the umbilical vein and arteries, with which they come in contact in the substance even of the placenta, but without anastomosing directly.

(Fig. 55.)



1. Uterus.

2. Intermediate tissue.

3. Placenta.

In all cases, the maternal blood is transmitted to the foetus after having undergone a suitable elaboration in the placenta; then, after distributing throughout the system of the foetus its nutritive principles, it is brought back to the placenta to be purified, according to some, by immediate contact with the blood of the mother; according to others, by the mediate contact of the coats of the maternal and foetal vessels; and this change produced in the blood of the foetus is analogous to what takes place in regard to the venous blood in the lungs of the adult. This is also the opinion of M. Velpeau, and it is generally adopted.

C. *Respiration*.—By foetal respiration is meant the phenomenon by which the blood which has served for the nourishment of the foetus is elaborated in the placenta.

D. However, the placenta alone does not appear destined to remove from the blood the materials unfit for nutrition; the liver is associated with it in these functions; and it is from these elements that the bile is formed.

Foetal Circulation.

The arrangement of the circulating organs, and the phenomena of the circulation in the foetus, are not the same as in the adult.

In the adult, the partition which separates the auricles of the heart is complete; in the foetus, on the contrary, this partition is pierced by an opening—the *foramen ovale*. In the adult, the trunk

of the pulmonary artery divides into two large branches, which go to each of the lungs; in the foetus, this pulmonary artery gives origin to a trunk, called *ductus arteriosus* (A), which opens into the arch of the aorta, while the lungs receive small branches.

The hypogastric branches of the primitive iliac arteries course along the sides of the bladder and urachus, under the name of umbilical arteries (B), and, together with the vein, constitute the umbilical cord, which enters the abdomen. This vein passes on to the longitudinal fissure of the liver, giving off branches, which ramify in the right and left lobes of this organ. It then divides into two trunks, one of which, the ductus venosus, or canal of Arantius, continues the course of the primitive trunk, and opens above the diaphragm into the inferior vena cava; the other branch, which is larger, passes to the right, and unites with the trunk of the abdominal vena portæ (F); it then ramifies in the liver, and anastomoses with the radicles of the hepatic veins, which empty, as in the adult, a little above the ductus venosus.

A. *Course of the Blood.*—The blood, starting from the radicles of the umbilical vein, traverses this vein the whole length of the cord, enters the umbilicus, and proceeds to the longitudinal sinus of the liver, distributing itself to the right and left in the lobes of this organ. Having arrived at the point where the two fissures cross each other, the blood divides into two principal columns, one of which follows the ductus venosus, in order to mix with the blood of the inferior vena cava; the other follows the umbilical branch of the vena portæ, reaches the right lobe of the liver, and is taken up by the hepatic veins, which throw it into the inferior vena cava just as it is traversing the diaphragm. To these two columns of blood is joined a third, composed of the blood brought by the inferior vena cava from the lower portions of the body. These three columns unite, and enter together the right auricle, thence through the foramen ovale into the left auricle, and then into the left ventricle, which sends it through the aorta to all parts of the body, but principally to the head and superior extremities; it is soon brought back from the superior parts by the jugular and axillary veins; it then passes into the subclavians, and from thence into the superior vena cava, which throws it into the right auricle; but, instead of passing through the foramen ovale, this blood goes into the right ventricle, and thence into the pulmonary artery, which sends off two small branches to the lungs, while the greatest part of it is carried through the ductus arteriosus to the descending aorta; there the blood commingles with that from the left ventricle, and passes down the descending aorta; a small portion of it is distributed to the inferior extremities, but the major part returns to the placenta by the umbilical arteries, to be again taken up by the umbilical vein, after it has undergone fresh elaboration by the contact of the maternal blood.

B. *Changes in the Circulation after Birth.*—In proportion as respiration becomes established, the blood flows in greater quantity to the lungs; it ceases to pass through the foramen ovale, ductus

arteriosus, &c. ; and the circulation becomes similar to that in the adult.

These changes take place as follow: the umbilical arteries, from the second day, begin to obliterate, but this obliteration is not complete until after the third or fourth day ; and it is not until the third or fourth week that they assume the form of a fibrous cord.

The umbilical vein and ductus venosus become obliterated a little later than the arteries, say about the eighth day.

The foramen ovale and ductus arteriosus do not, in general, become closed until the end of eight days. Billard has sometimes found them open as late as three weeks, without occasioning any suffering to the child. (For Fig. 56, and a Table showing the Course of the Blood in the Fœtus, see pages 70, 71.)

Viability of the Fœtus

By the viability of the fœtus, we understand that condition of it which enables it to live an independent existence. An infant may be viable before the full period of gestation ; and it may happen that it is not so even at the completion of this period, when affected by disease or deformity.

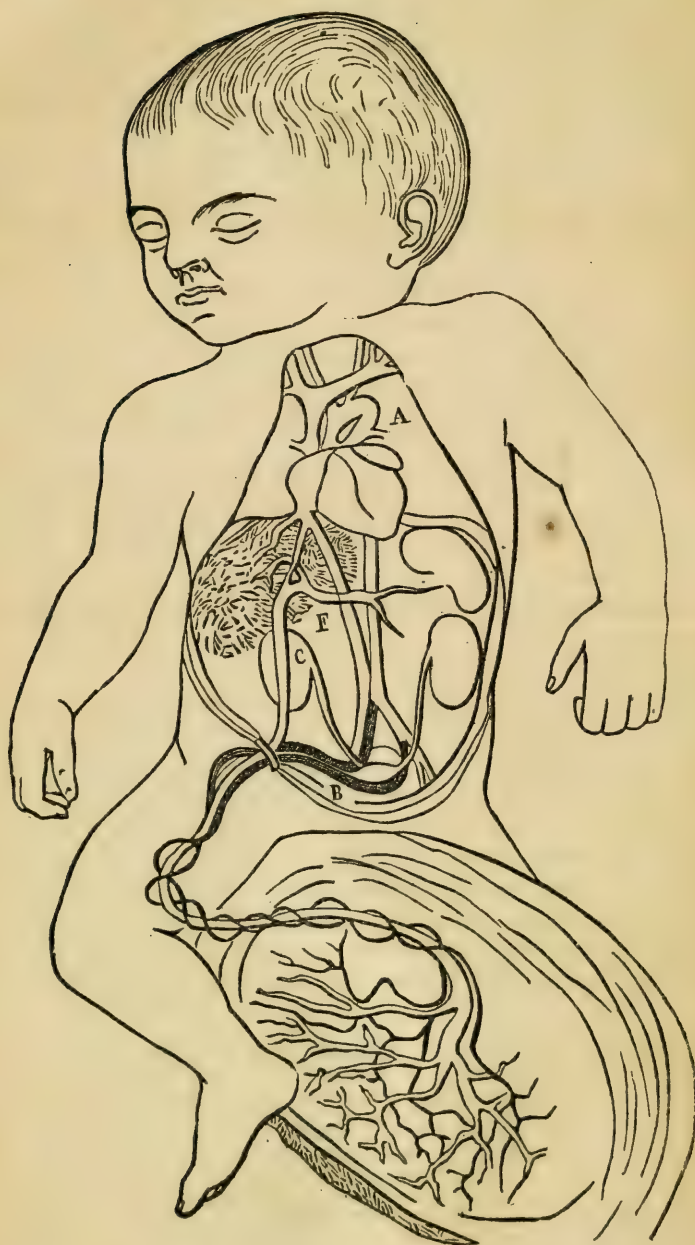
The fœtal evolution not being fixed, it is the degree of perfection which its organs have attained, and not the period of pregnancy, that is to determine its capability for external life. However, the law has pointed out a determinate period ; and it has decided that a child is not *viable* before the end of the sixth month, and that the husband may disown it if declared viable before the hundred and eightieth day of marriage.

If we consult authors, this extremely wise law may not always appear just, for we find instances mentioned of children born before the sixth month, who were not only healthy, but who, notwithstanding their small size, lived for a long time. Such is the history, reported by Van Swieten, of Fortunio Liceti, who, born before the sixth month, and not being larger than the hand, attained his seventy-first year ; and there are other cases cited* of children, born at the end of the fifth month, who were enveloped until nine months had passed by in cotton, exposed to a gentle heat, and nourished with a few drops of milk, who, at the comple-

* October 10, 1842, I requested two of my pupils, Messrs. Arendell and Morris, to attend Mrs. H., who was one of my clinique patients, and whom I had previously attended in three confinements. There was a singular predisposition in this woman to flood immediately after the birth of the child ; and on one occasion, having arrived after she was in a state of collapse from loss of blood, I experienced great difficulty in rallying her, which, however, was finally accomplished by administering large doses of laudanum.

A few hours after the gentlemen reached her house, she was delivered of an infant which presented the most singular aspect of any fœtus I had ever seen. It weighed two pounds nine ounces ; its face was extremely shrivelled, giving it the appearance of a superannuated woman ; the surface of its body was of a scarlet hue ; and there was every indication of its being premature. It was, indeed, an unsightly object ; yet it breathed, and, in a short time after its birth, cried feebly. I ordered it to be wrapped in soft cotton well lubricated with warm sweet oil. It was nourished with the mother's milk, by having a few drops put into its mouth ; at first it laboured under great difficulty in swallowing ; but gradually it succeeded in taking sufficient to nourish it, and it is now a vigorous, healthy child. Independently of the evidence afforded by the physical appearance of this infant, I am satisfied, from other circumstances, that the mother could not have completed her sixth month of pregnancy.—Ed.

(Fig. 56.)



• Head and upper limbs.



tion of the ninth month, were enabled to take the breast, and continued to thrive as well as if born at the ordinary period of gestation.

Nevertheless, although no one can deny that the fœtus may live before the end of the sixth month, notwithstanding the rarity of these cases and the difficulty of proving them, yet it must be remembered that it is generally not until after the seventh month that the fœtus is viable. The law, therefore, has adopted a medium period, the *end of the sixth month*.

ART. II.—COMPOUND PREGNANCY.

Pregnancy is called compound when the uterus contains two or more fœtuses. It is impossible to comprehend the cause of this anomaly. Twin pregnancies are tolerably frequent: in 37,441 accouchements in the Maternité, there were 444 cases of twin pregnancies. Triplets, although less frequent, are not, however, very rare; but quadruple births are so rare that some authors have doubted their existence; some examples, however, are mentioned. Peu states that at the Hôtel Dieu there were five living children at one birth.

But as to pregnancies of six and seven fœtuses, I certainly doubt them; and in order to credit such extraordinary facts, they need a degree of authenticity which is deficient in most of those mentioned. Farther, if the examples cited are correct, it is very doubtful whether the presence of so great a number of fœtuses in utero could be detected except by post-mortem examination or spontaneous abortion. How can we, in a word, admit the possibility of the uterus undergoing this degree of distention?

Authors admit four species of twin pregnancy:

1st. In the first, two ovules are fecundated in a common caduca, and each fœtus is covered by a separate amnios and chorion. These apartments, formed by the chorion and amnios, are united to each other by a very delicate cellular tissue, whence it happens that each membranous partition separating the fœtuses is composed of four folds, two amnions and two chorions. The placentas frequently become blended with each other, or are united by membrane; but in most cases, notwithstanding this arrangement, there is no vascular communication between them.

2d. In the second species, the ovule contains two embryos, which are each enveloped by a different amnios, but which are contained in a common chorion and caduca; each partition is, therefore, composed of only two folds, the amnions. In this case, the placenta is single, and there are almost always numerous vascular communications between the two points into which are inserted the umbilical cords.

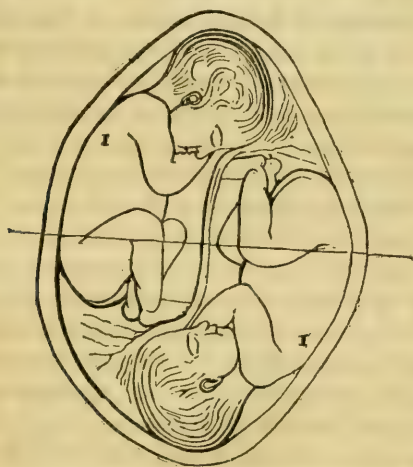
3d. In the third, the embryos are enclosed in a single cavity, and have likewise only one placenta.

4th. Lastly, in the fourth, one ovule contains another, and it is this that gives rise to monstrosities by inclusion.

Diagnosis.

Can the presence of several children in the womb be ascertained before delivery? The volume of the abdomen, and the multiplicity of active movements, are the only data on which we can presume that the uterus contains more than one fœtus. But this sort of investigation is quite uncertain. Such, however, is not the case with the signs by which we are to judge of the presence of twins in utero. The fulness, and not the form, of the abdomen, although we may be satisfied that the uterus is bi-lobed, may serve as a ground of presumption in favour of a double pregnancy. By examining the abdomen externally, if the uterus be not much distended by the liquor amnii, we may frequently be enabled to recognise the different parts of the fœtus, as also their situation. Thus, it is possible to ascertain that, at the summit of the ovum, there are two tumours, one to the right and above, solid, spherical, formed by the head of a fœtus; the other, to the left and above, less solid and more irregular, united to small movable parts, is composed of the pelvic extremity of another fœtus. Besides, the active movements

(Fig. 57.)



are perceived at several different points at the same time; the impulses communicated to the mother by the inferior extremities are felt, above and below, in two opposite directions. The vaginal ballottement becomes exceedingly difficult, often impossible to determine, in consequence of the situation of the two fœtuses. Pressed the one by the other in the cavity which contains them, they do not repose on the inferior segment of the uterus, and cannot, therefore, be displaced by the finger. M. Velpeau, however, mentions a case in which Desormeaux mistook a twin pregnancy in consequence of the facility with which he determined the ballottement.

Auscultation will here be of essential service. It enables us to detect, on two different points of the abdomen, the pulsations of the fœtal heart, one above the transverse line, and to the right (I), the other below it, and to the left. It should, however, be stated that,

if the two fœtuses are placed above or in front of each other, the pulsations of only one heart will be heard.

Be it as it may, it is not very difficult to detect a twin pregnancy. Thirteen years ago I ascertained the existence of twins in a female, whom I have since several times attended in child-birth. The same thing occurred twice at La Clinique, when, once during labour, and once before accouchement, I predicted the presence of two fœtuses.

Termination.

As to the mode of conducting these cases, it will depend on the kind of double pregnancy. Thus, in the first species, *two fœtuses contained in one caduca, having each a particular amnios and chorion*, the infants are ordinarily expelled at once; but the uterus, in consequence of its enormous distention, may contract prematurely, and one fœtus be expelled before term, while the other, retained by the retraction of the organ, may not be born until some days, or even weeks, afterward. Cases similar to these, which certainly are not rare, have given rise to the remarks of authors with regard to superfœtation. One of the fœtuses may cease to live and be expelled, or remain in the uterine cavity, the other continuing to grow; and in this latter case, the dead fœtus may be expelled simultaneously with the one that has arrived at full term, or remain for a longer period in the uterine cavity, and then become exsiccated.

Thus instances are cited of fœtuses being expelled several years after the birth of the other twin; I saw a fœtus of this kind at the Salpêtrière, in a woman who had not conceived for thirty years.

In the second species, in which the *caduca and chorions are common to the two fœtuses*, the children are expelled simultaneously. However, it is not impossible that the second fœtus may be retained for some hours after the first, if the rupture of the sac should take place at that portion of the chorion only, corresponding with the amnios of one of the fœtuses.

In the third kind, the *fœtuses being enclosed in the same apartment*, their expulsion cannot be otherwise than simultaneous.

In the fourth, *monstrosities by inclusion*, the two fœtuses constituting but one, the expulsion is the same as in the case of a single fœtus.

As to the mechanism of these various expulsions, the precautions they require, the difficulties they occasion, I refer the reader to future details.

CHAPTER II.

ABNORMAL PREGNANCY.

ART. I.—EXTRA-UTERINE PREGNANCY.

THE fecundated ovule, instead of penetrating the uterine cavity, will sometimes deviate more or less from the route which it should pursue; it becomes arrested in different points of its course, and is there developed. Pregnancy is then called extra-uterine.

There are several forms of extra-uterine pregnancy, depending on the place in which the ovum becomes fixed.

1st. *Ovarian Pregnancy*.—The ovule in this species is developed either in the substance of the ovary, or on its surface. In the former case, the pregnancy is denominated internal ovarian; in the latter, external ovarian.

It is very difficult, indeed I regard it as almost impossible, to distinguish these two species from each other; it is probably owing to this circumstance that M. Velpeau has been induced to deny the possibility of an internal ovarian pregnancy. The ovary, in both of these cases, is so completely compromised by the development of the ovule, that we cannot detect a trace of it.

2d. *Sub-peritoneal-pelvic Pregnancy*.—In this species, the ovule is developed between the two folds of the broad ligaments, outside of the peritoneal and pelvic cavity.

3d. *Tubo-ovarian Pregnancy*.—A portion of the ovary, and of the dilated fallopian tube, constitutes, in this case, the cyst in which the foetus is contained.

4th. *Abdominal Pregnancy*.—This variety, in which the ovule is developed in the abdominal cavity, is divided into primitive and secondary; primitive, when the ovum has ingrafted itself on some point of the abdomen before leaving it; secondary, when, in consequence of the rupture of its primitive cavity, the uterus, tube, or ovary, &c., it penetrates the abdominal cavity.

5th. *Tubal Pregnancy*.—This is the most common of all the various forms of extra-uterine pregnancy; and the foetus is developed in some portion of the tube between its fimbriated extremity and the external surface of the womb.

6th. *Tubo-interstitial Pregnancy*.—The ovum is arrested in that portion of the tube which is found in the substance of the uterine walls, and becomes developed at that point.

7th. *Interstitial Pregnancy*.—The ovum, as in the preceding species, is arrested in the tube, but instead of becoming developed there, it passes through the walls of the tube, and penetrates between the fibrous layers of the uterus, where it receives its growth.

8th. *Utero-tubal Pregnancy*. The ovule is developed partly in

the tube, and partly in the uterus; this variety is not admitted by M. Velpeau.

9th. *Tubo-abdominal Pregnancy*.—In this form, the fœtus is developed in the abdomen, the placenta is inserted into the uterus, and the umbilical cord traverses the whole extent of the fallopian tube, in order to put the fœtus in communication with the placenta; Hunter, Patuna, Hofmeister, each report an example of this variety, which is the most rare of all.*

§ 1. *Pathological Condition.*

In extra-uterine pregnancies, the ovum is furnished with the chorion and amnios. Moreover, in the sub-peritoneal-pelvic and secondary abdominal varieties, it is contained in a pseudo-membranous cyst, which represents the caduca. This cyst does not exist in primitive abdominal pregnancy.

The parts of the mother to which the ovum is attached become the seat of a sanguineous congestion, and large vessels ramify under the peritoneum at the point into which the placenta is inserted.

The uterus becomes sympathetically enlarged; its tissue softens, and its internal surface is covered by a membrane presenting all the characters of the caduca.

§ 2. *Causes of Extra-Uterine Pregnancy.*

The causes of extra-uterine pregnancy are as yet enveloped in complete mystery. Authors generally admit that a sudden fright at the moment of fecundation may change the ordinary course of things, and that the ovule, not being seized by the fimbriated tube, becomes developed in or on the ovary, or falls into the abdominal cavity, &c., &c. But how are we to admit this opinion, when we know that the ovule does not abandon the ovary until some days after fecundation? However, it is possible that the fright might take place at the instant the ovule leaves the ovary.

M. Dezeimeris attributes this accident to external violence; M. Velpeau to the anomalies and affections of which the tube may become the seat, such as narrowness, want of continuity, deviations, curtailment of its length, engorgement, paralysis, spasm, induration, &c., &c., &c. This opinion is undoubtedly the most reasonable.

§ 3. *Diagnosis.*

The signs which characterize an extra-uterine pregnancy are so evanescent during the first months, that it becomes very difficult, if not impossible, to distinguish between it and a true pregnancy, or even a uterine engorgement. Thus, immediately after conception, the woman experiences abdominal pains, similar to the cramps which attend the commencement of a true pregnancy.

* For farther details, see the learned researches of MM. Velpeau, Breschet, Dezeimeris, and those recently made by M. Gerdy (Bulletin de l'Académie Royale de Médecine, tome iv., p. 1045.)

Sometimes there is a fixed pain in one of the iliac fossæ. At a later period, the changes in the body and neck of the uterus, which always accompany the development of an extra-uterine foetus, may give rise to error, by inducing the belief that normal pregnancy exists, especially if the menses should have ceased to appear, and in this case, it sometimes happens that they do not reappear until after the ordinary term of accouchement has passed by, and often they are absent during the entire existence of extra-uterine pregnancy. However, the contrary as frequently occurs, and menstruation is in no way deranged by this abnormal conception. These same variations present themselves with regard to the secretion of milk; but when the development of the abdomen is manifest, its irregular form, divided into two portions, one of which is composed of the uterus, and the other of the abnormal pregnancy, enables us to arrive at a correct diagnosis in reference to this species of gestation. The vaginal touch, in this case, would prove of essential service, for it would afford us the means of ascertaining the vacuity of the uterus, its separation from the tumour in which is contained the foetus, and the change of situation which the development of this tumour has caused the foetus to undergo. If the inferior portion of the cyst should occupy the place of the uterus at the superior strait, the neck of this organ will be reached with great difficulty; but it will be easy to determine the ballottement through the walls of this tumour. I was enabled to detect this sign in a woman operated on at La Clinique by M. Dubois, before I came into office. It was so manifest, that this circumstance decided M. Dubois as to the operation. (See page 79.) By the abdominal examination, we can readily distinguish the active and passive motions of the foetus, which are painful to the mother.

Auscultation is here of great value in establishing positively the presence of a living child, and in distinguishing it from a movable body foreign from conception, and developed in the midst of a cyst. In the female who, it was supposed, laboured under an extra-uterine pregnancy, and of whom I spoke in the article *Diagnosis of Pregnancy* (page 24), the abdominal ballottement caused a belief that she was pregnant, and even the examination by touch yielded a sensation very analogous to the vaginal ballottement; but before the pretended term of the pregnancy, auscultation exhibited nothing more than a *bruit de souffle* in the direction of the iliac fossæ.

§ 4. *Progress.*

At the ordinary term of gestation, frequently even before this period, the pains of childbirth present themselves, which continue often for three or four days, and sometimes longer. If the pregnancy continues several years, the pains may return at varied intervals, and continue for several weeks; and they occasionally manifest themselves at each period corresponding with the term of gestation.

The duration of extra-uterine pregnancy is very variable; it may terminate in a few weeks, or be prolonged for several years.

Left to itself, it usually terminates by the rupture of the cyst at some indeterminate period, but which, however, does not usually pass beyond the middle of pregnancy. This rupture produces almost necessarily the death of the foetus, but in some instances it has survived. It is accompanied by very serious consequences, as, for example, hemorrhage, which occasions the immediate death of the mother; or, if the hemorrhage be arrested, peritoneal inflammation, determined by the passage of the foetus, the liquor amnii, and blood into the peritoneal cavity. Two conditions may then present themselves: either the mother dies, or the peritonitis yields to treatment, and then the remains of the impregnation is enveloped by a new cyst, and continues in the abdominal cavity during life; in this case the foetus appears to have undergone a complete exsiccation; frequently, also, the tissues are transformed into an osseous substance. Sometimes, when it has been seen a long time after the term of pregnancy, if the rupture of the cyst has not produced the death of the foetus, and if it has lived for some time in its new habitation, the osseous system of the foetus will be found much greater than at the ordinary period of gestation. Sometimes even the existence of several teeth has been observed, but this is rare; and most commonly, the soft parts of the foetus become more or less putrid, and the remains of the skeleton are macerated in a mixture of blood, amniotic fluid, and pus; the coverings of the foetus become destroyed, fistulous openings are formed, which place them in communication either with the abdominal walls or perineum, or with the intestinal canal, stomach, vagina, uterus, bladder, and rectum: in all such cases, the remains pass out through these various openings.

It frequently happens that the suppuration from the wound exhausts the patient; at other times the suppuration ceases, the wound heals, or is converted into a simple fistulous ulcer, and the woman survives many years.

§ 5. *Treatment.*

During the first months of an extra-uterine pregnancy, nothing should be attempted in the way of an operation, for the remedy would be more grave than the disease. We should limit ourselves to general means, such as abundant and repeated bleedings, in order to prevent local congestions, which might form near the cyst, and thus favour its rupture. When this rupture occurs spontaneously, we should endeavour to prevent or moderate the hemorrhage by repose, refrigerants, bleeding, &c., and combat the consecutive peritoneal inflammation by the appropriate remedies.

In a case of extra-uterine pregnancy which has arrived nearly at term, if labour should manifest itself, the accoucheur should at once, with a view of arresting it, have recourse to the means advised in the article *Abortion (injections of laudanum in large quantities)*, and he should on no account, in order to save the child, practise gastrotomy, which entails on the mother certain death.

The danger of the operation is far greater than in the gastrotomy.

my practised in cases of normal pregnancy. The placenta does not separate of itself from the internal surface of the cyst; it adheres so intimately to it that it seems to be an integral part of it. Its extraction, therefore, is very difficult and dangerous.

Again, how can we decide to perform this operation when we know that the unhappy woman, if she should not die immediately, will undoubtedly sink gradually, and in the midst, too, of the most excruciating sufferings?

In a word, it is my opinion, that if the labour cannot be quieted by opium, the cyst being intact, nothing should justify an operation; and the objection, if possible, is still stronger, should the cyst be ruptured.

Art cannot profitably interfere until the first phenomena have passed by, whether there has been rupture of the cyst or not; and then there should be no haste: the cyst should be allowed time for a new formation, and this is a slow process; and then the operation is only to be attempted in order to prevent imminent danger, or to relieve the woman from habitual suffering, which renders life a burden to her.

However, as an exception to this rule, I shall very briefly report a case of extra-uterine pregnancy which occurred at La Clinique before my entrance into it, and which has just been published by M. Voillemier, interne of La Clinique at that time.

A woman presented herself, having been labouring under an extra-uterine pregnancy of twenty-two months' standing. She was in tolerable health, but her infirmity produced such a degree of distress that she supplicated M. P. Dubois to deliver her. The head of the fœtus was felt distinctly at the superior strait, through the superior and posterior wall of the uterus; and a very important fact to be remembered is, that the head enjoyed considerable mobility, so that the vaginal ballottement was perceived as readily as in ordinary pregnancy. With these favourable dispositions, M. P. Dubois hoped, by an incision made through the superior wall of the vagina and the inferior of the cyst, to be able to seize the head with the forceps; and certainly there were ample grounds for this hope. However, before resolving on an operation of this magnitude, he thought it judicious to take the counsel of some of his confrères. I was present at the consultation, and all, without exception, approved of the operation, and judged, after a full examination, that it was possible. It is therefore untrue, as has been since asserted, that the operation was performed notwithstanding a strong opposition.

When the walls of the cyst and vagina were cut into, it was discovered that adhesions existed between the walls of the cyst and scalp, and that the mobility was only between the bones and scalp. It was impossible, therefore, to attempt to seize the head, and the operation was abandoned.

Nevertheless, though not immediately, it was ultimately entirely successful. At the expiration of a few days, the walls of the cyst became inflamed, and the fœtus, in a state of putrefaction, was de-

tached in small pieces; the bones were extracted by means of the long pincers and injections; the opening closed, and the woman left the hospital in a state of perfect health. Two or three months afterward, the opening again presented itself in order to afford passage to the tibia, which was wanting to complete all the bones of the skeleton, and which the woman herself brought to La Clinique. Since this time she has continued to enjoy uninterrupted health.

CHAPTER III.

FALSE PREGNANCY, OR AFFECTIONS WHICH MAY SIMULATE IT.

ART. I.—RETENTION OF THE MENSES.

THE accumulation of the menstrual blood in the uterus may be mistaken for pregnancy:* this error is possible during the first months of the suppression; for this retention frequently determines the various sympathies which constitute the presumptive signs: the difficulty, too, of ascertaining the existence of pregnancy during the

* On the 20th of June, 1842, I was visited by a respectable woman, the wife of a mechanic, who told me that she had been married about six weeks. She stated that her husband, about a month after her marriage, had begun to treat her cruelly, in consequence of suspicions he entertained with regard to her chastity. When I saw her, she had the appearance of being about six months pregnant; and she frankly acknowledged that some of the female relatives of her husband had impressed him with the belief that she was pregnant when he married her: hence his cruel treatment. The poor woman was in deep distress, and urged me to satisfy her husband that she was unjustly accused, telling me, at the same time, that she would submit to any examination I might suggest. She informed me that she was twenty-seven years of age, and had never menstruated; and that her general health had been wretched from early girlhood. On calling to see her the following day, I discovered that there was an indistinct and circumscribed fluctuation in the anterior portion of the abdomen, extending about one inch above the umbilicus; and on introducing my finger into the vagina, and reaching the cervix uteri, I discovered an entire absence of the os tincæ, the lower and central portion of the cervix being quite smooth and uniform on its surface. With the other hand applied on the abdomen, I grasped the fundus of the womb, and felt that I embraced this organ completely between the hand externally and the finger introduced into the vagina. The diagnosis was plain—that the fluctuation felt in the first instance was the menstrual blood contained within the uterus; and that, in consequence of there being no outlet, this fluid had accumulated, producing distension of the uterus, and giving rise to a suspicion of pregnancy. After this examination, I stated most fully my opinion to the husband, and told him that his wife could be relieved by an operation; at the same time assuring him that his suspicions were entirely unfounded.

Assisted by two of my office pupils, Messrs. Burfessell and Morris, now Doctor Morris, of North Carolina, I introduced a speculum into the vagina, and brought distinctly to view the cervix uteri; this I penetrated at its lower and central portion, and instantly not less, I am sure, than three pints of blood were discharged from the uterine cavity. It is as well to mention that the perineal strait was somewhat contracted in its transverse diameter. The operation was attended with very little pain; the uterus was restored to its ordinary size, and the patient recovered perfectly in the course of a few days, when I was much gratified with a visit from her and her husband, the latter appearing really contrite, while the former assured me that she was again restored to the confidence and love of her husband.

Precisely six months from the day I operated, I was called on by this same patient, who informed me that she now really believed herself pregnant, which I found to be actually the case. I attended her in her confinement, and after a severe labour of twenty-eight hours, I found it necessary to apply the forceps, and delivered her of a fine living son, assisted by two of my pupils, Messrs. Meriwether and Whipple, of Alabama.—ED.

first months, as I have already remarked in the article *Diagnosis of Pregnancy*, is another cause for doubt. But when the suppression is prolonged, and the accumulation consequently considerable, it is easy to distinguish it from an advanced pregnancy, which this abnormal development of the uterus so closely simulates.

The absence of the active movements of the fœtus, of the pulsations of the heart, the abdominal or vaginal ballottement, the regularly ovoid form of the abdomen, &c., &c., enable us to determine that there is no pregnancy. The species of disease which simulates pregnancy is characterized by the development of the abdomen, which does not take place regularly, but indeed diminishes, and again increases, particularly at the menstrual periods. The vaginal touch will indicate either an imperforate hymen, or an occlusion of the os tinæ.

Treatment.—If there should be occlusion of the os tinæ, we must, in order to afford issue to the blood, introduce into the neck a silver sound, a stilet, or any other similar body; this will almost always suffice to overcome the obstacle, when it is covered by a simple agglutination; but if it cannot be overcome in this way, we must employ a long trochar or bistoury, the blade of which must be covered with linen except at its point. After the puncture is made, a small piece of lint is to be introduced, in order to prevent union. If the liquid should be so thick as not to escape through the puncture, it will then be necessary to make a larger incision.

If there should be occlusion of the vagina by a simple diaphragm, a conical incision should be made. When the obstruction is occasioned by the union of the vaginal walls, the operation will be both difficult and dangerous; however, by a cautious dissection, it can be performed. M. Amusat cites a case of this kind in his own practice.

Happily, it is at the vulva that the obstruction is most frequently met with, and is occasioned by the hymen. The blood occupies the vagina, and not the uterus. The collection is between the lips of the womb and vulva, and a distinct fluctuation is felt. In this case, a large incision is to be made into the integuments; but if fluctuation should not be felt, then the incision is to be made layer by layer, from without inward. It is proper, in both cases, to remove the flaps, which frequently result from the incision.

ART. II.—COLLECTION OF WATER.

The accumulation in the uterus of a clear and slightly lemon-coloured fluid, sometimes mixed with blood, may also simulate pregnancy. It is the same with the accumulation of gas in *uterine tympanitis*. In the former case, the error is frequently possible before the third or fourth month. This condition is accompanied by retention of the menses, and most of the presumptive signs; but after this period a mistake is scarcely possible. However, examples are mentioned of watery pregnancy, which, having produced no disturbance in the economy, had been mistaken for true pregnan-

cy, even at an advanced period. One of my relatives, the daughter of an experienced accoucheur, presented a very remarkable instance of this. After a suppression of eight months, she voided a large quantity of clear water, and her abdomen, as large as at full term, suddenly diminished in size, and her health experienced no derangement.

If this accumulation of water should be due to the same causes that produce the retention of the menses, the same means of relief are to be employed.

In the latter case, or *uterine tympanitis*, the uterus is extremely light, and percussion results in a characteristic resonance. This affection requires the same indications as the preceding. •

ART. III.—NERVOUS OR HYSTERICAL PREGNANCY.

Women who have an ardent desire to become mothers frequently imagine themselves pregnant when they are not so. I have already cited the case of a female in whom the illusion was such as really to cause her to believe that she felt the movements of the fœtus. Such instances are by no means rare; M. Velpeau mentions a great number of them.

ART. IV.—MOLAR PREGNANCY.

We understand by a mole an abnormal production developed in the uterus, without any manifest alteration of the uterine cavity. They are exceedingly various; the most common are the following:

1st. *Fleshy Mole*.—A species of membranous concretion, which is deposited in the uterus at the menstrual periods.

2d. *Fibrinous Bodies*, or degenerated coagula of blood.—These two varieties are found equally in the young girl and married woman. But the following, which are undoubtedly fœtal degenerations, are met with only in the latter.

A. *Mole of Generation*.—An attentive examination will almost always enable us to trace in this species the remains of natural structure. The degeneration affects the fœtus or its envelopes. If the ovum is not expelled when the fœtus has been blighted, some monstrosity results; if, on the contrary, it be the annexæ that are affected, a veritable mole is formed. In the latter case, the embryo and umbilical cord are completely destroyed; they are either absorbed or expelled through a rent of the ovum, and there is no vestige of them. Under these circumstances, there is nothing left but a mass more or less voluminous, possessing various forms; most commonly it is ovoid; it contains a fluid, sometimes clear, sometimes coloured. Frequently the amnios is found intact, while there are only traces of the other membranes; sometimes both the amnios and chorion exist, with shreds of the caduca. I have seen several of this kind, and among others one which measured from four to five inches in length. Placental apoplexy, schirrous tumours, and, in a word, the various degenerations of the placenta, may produce this species of mole.

B. *Hydatid Mole*.—This is the most common of all the moles of

generation. They are capable of assuming every variety of form, which satisfactorily explains why we find in the older works such wonderful narrations of women having been delivered of bodies possessing the shape of animals, fruits, &c., &c. M. Velpeau regards it as the result of a hypertrophy of the villousities of the chorion; this is also the opinion of M. P. Dubois. This form of mole may attain a considerable volume, and, in this case, the enlargement of the abdomen is similar to a pregnancy at the ninth month. M. Dubois exhibited an enormous mass at his lectures, which had been expelled by a female at the Maternité.

It is impossible, at the commencement of pregnancy, to say whether the uterus contains a normal or degenerated foetus. At a more advanced period it is not so difficult to ascertain that a foetus does not exist in the uterus, but we may very readily confound the presence of a mole with some of those affections which simulate pregnancy. When the mole is expelled, the female requires the same attentions as in abortion. This accident may occur several times in the same woman, and we possess no means of preventing or curing it; only, in cases in which we have detected the presence of a mole in the uterus of a woman who has already thrown off several of them, we may administer ergot in order to favour its expulsion.*

* In 1839 I received a note, requesting me to visit, without delay, a lady who was residing in the State of New-Jersey, about thirty miles from this city. I immediately repaired to her residence, and on my arrival was received by her father, a venerable and accomplished gentleman. He seemed broken in spirit, and it was evident that grief had taken a deep hold of his frame. On being introduced into his daughter's room, my sympathies were at once awakened on beholding the wreck of beauty which was presented to my view. She was evidently labouring under phthisis, and it appeared from her wasted form that her days were numbered. My presence did not seem to produce the slightest disturbance, and she greeted me with this expression, "Well, doctor, I am glad to see you on my beloved father's account, for he will not believe that I cannot yet be restored to health. Life has lost all its charms for me, and I long for the repose of the grave." These words were spoken with extraordinary gentleness, but yet with a firmness that at once gave me an insight into the character of this lovely woman. From her own lips I received the following history of her case. Her father was a clergyman of high standing in the English Church, and had had a pastoral charge in England, in which he continued until circumstances rendered it necessary for him to leave that country and seek a residence in America. At a very early age she had lost her mother, and was almost entirely educated by her father, whose talents and attainments admirably fitted him for this duty. When she had attained her eighteenth year, there was an attachment formed between her and a young barrister of great promise and respectability. This attachment resulted in a matrimonial engagement. Soon after the engagement, she began unaccountably to decline in health. There was considerable irregularity in her menstrual periods, with more or less constant nausea, loss of appetite, inability to sleep, feverishness, and an uncontrollable dislike to society; besides, there was a general change in her personal appearance: her abdomen became enlarged, her breasts increased in size, &c. These changes soon attracted the attention of some of her female acquaintances, and rumour was uncharitable enough to suspect her virtue. The barrister to whom she was affianced heard of these reports, and, without a moment's delay, wrote a letter to her father, begging to be exonerated from his engagement. This was assented to without hesitation. This young lady, conscious of her own innocence, requested that a physician should be sent for, in order that the nature of her case might be ascertained. A medical man accordingly visited her, and, after an investigation of her symptoms, he, no doubt from very philanthropic motives, informed the father that she was pregnant, and that means should be immediately taken to keep the unpleasant matter secret. The father, indignant at this imputation against the honour of his child, spurned the proposition, and instantly requested an additional consultation. This resulted in a confirmation of the opinion previously expressed, and the feelings of that father can be better appreciated than described. Without any delay, that good man determined to resign his living, gather up his little property, and proceed with his daughter to America. On his passage to this country his daughter became extremely ill, and as there was a physician on board the steamer, his advice was requested. After seeing the patient (she was at the time labouring under excessive vomiting from sea-sickness), he

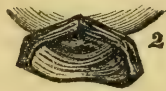
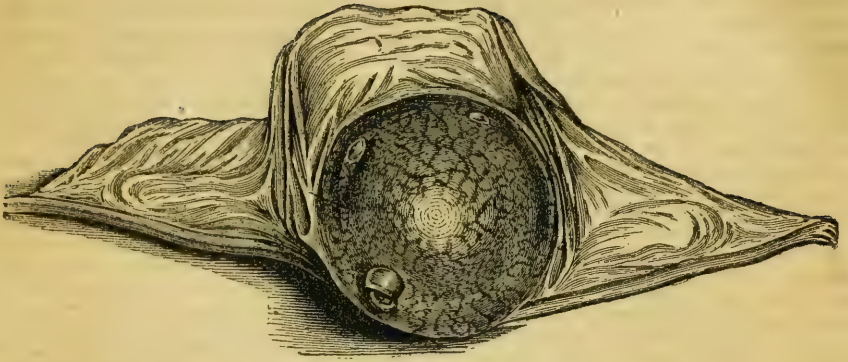
told the father that he apprehended that she might have a premature delivery. Such, therefore, was the general appearance of this lady, that a physician, merely judging from *appearances*, at once concluded she was pregnant.

This was about the substance of what I learned of the previous history of this lady; and my opinion was then requested as to the character of her malady. My feelings were naturally very much enlisted in her behalf, and I proceeded with great caution in the investigation of her case.

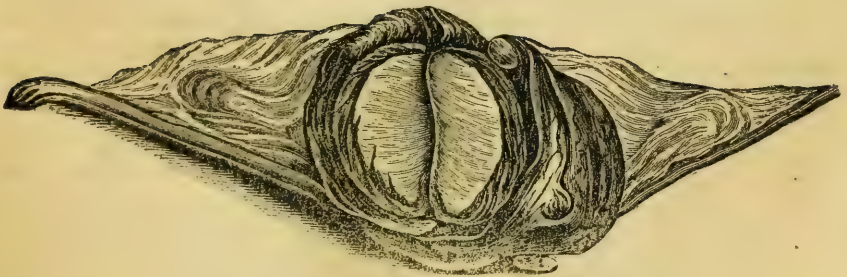
In placing my hand upon the hypogastric region, previously flexing the thighs upon the pelvis, I distinctly felt an enlargement, which, from its circumscribed character and position, I recognised to be the uterus. The abdomen was excessively tympanitic, and as much distended as it usually is at the seventh month of gestation. In making a vaginal examination, the enlarged uterus was plainly felt, and it presented a hardness to the touch which I had never before experienced. It was not the hardness of *schirrus*, nor was there any pain experienced on pressure. The *os tincæ* was slightly dilated and perfectly circular. Projecting through it I felt a small body, which to the touch seemed to be of a calcareous nature. I could readily grasp the uterus between one hand applied to the hypogastric region and the finger introduced into the vagina; and it appeared to equal in size the foetal head at full term. The organ appeared to be much more rounded in its development than is usual in pregnancy; and on introducing the finger into the rectum, the same hardness of the tumour was experienced that was observed in the vaginal examination, but an entire freedom from pain. It was very evident that there was no pregnancy, and without hesitation I gave this as my opinion; at the same time stating that the enlargement of the womb depended most probably upon some internal growth, the precise nature of which I could not determine. That it was not a polypus was evident from the absence of all the symptoms which usually characterize it. After I had expressed my opinion that she was not pregnant, the only observation this interesting creature made was, "Doctor, you are right." These few words were full of meaning, and their import I could not but appreciate. The father was soon made acquainted with the result of my examination, and he seemed perfectly unmoved as I expressed to him my opinion. It was evident that he had never faltered for one moment in the belief of his daughter's virtue, and required no assurance from me or any other living being that his child had been cruelly abused. He asked me with great solicitude whether something could not be done to restore her to health; and his agitation was extreme when I told him that his daughter was in the last stage of consumption. I left him with the pledge that he would inform me of her dissolution, and afford me an opportunity, by a *post-mortem* examination, of testing the truth of my opinion. About four weeks from this time I received a note announcing the death of this lady, and requesting that I would immediately hasten to the house, for the purpose of making the autopsy. Dr. *Ostrom*, now practising in Goshen, in this state, at my request, accompanied me, and assisted in the examination. It was discovered that the enlargement of the uterus was in consequence of a fibrous tumour, which occupied its whole internal surface; and the small body which I had felt projecting through the *os tincæ* was a calculous concretion, of which there were several attached to the tumour. Plate No. 1, page 85, shows the exterior of the tumour; fig. 2, the circular character of the *os tincæ*. Plate No. 2 exhibits the internal structure of the tumour, with several small calculous concretions.

The mere narration of this case carries with it its own comments; and I trust a proper moral may be drawn from its perusal.—Ed.

(Plate 1.)



(Plate 2.)



CHAPTER IV.

DISTURBANCES AND DISEASES INCIDENT TO PREGNANCY.

THE pregnant woman is liable to every disease, and whether the disease precede pregnancy or appear during its course, it always constitutes a serious complication.

But the limits of this work will not permit me to describe the influence which each disease exerts over pregnancy, and I shall, therefore, limit myself to certain affections which ordinarily complicate it, or which are peculiar to it.

Conception frequently occasions in the economy a disturbance, the effects of which vary not only in different individuals, but sometimes also in the same person during successive pregnancies. Thus, a female is affected with vomiting, syncope, &c., in one pregnancy, and in the following enjoys perfect health. More generally, however, the same order of symptoms presents in each pregnancy; and, in this case, the disturbances become almost a certain sign of conception. These affections are modified by the temperament and habits of the individual, and also by the period of pregnancy.

ART. I.—DIGESTIVE LESIONS.

The sympathetic relations between the uterus and digestive organs may occasion a derangement of their functions, and give rise to several inconveniences or diseases, which, in the order of their frequency, are, nausea and vomiting, anorexia, acid stomach, longings, dyspepsia, constipation, ptialism, and diarrhœa.

§ 1. *Nausea and Vomiting.*

It is very rare for a woman to become pregnant without being troubled with these ailments. They occur so constantly in pregnancy, that they constitute one of the first presumptive signs of this state. When moderate, they are not of much moment, and terminate naturally between the third and fourth month of gestation, but it is not unusual for them to reappear towards the end of the term. During the first months, they are occasioned by the sympathetic reaction of the uterus on the stomach; in the latter period of pregnancy, by the mechanical pressure exerted by the uterus on the stomach and intestines. The particular time of the day at which these vomitings present themselves varies: some women throw off early in the morning a slimy fluid more or less abundant; or, after one or each meal, they reject a portion of the aliments taken into the stomach. This latter case becomes serious when there is a complete rejection of the food; but it is very rare, after even repeated vomitings, that sufficient food for the purposes of nourish-

ment does not remain in the stomach. I have often heard women complain that they could not retain food in the stomach, and yet they were not sensibly emaciated; however, I have met with other cases in which repeated vomiting would have been followed by the gravest consequences, if it had not been moderated.

The vomiting is in general easy, and not painful; but it is occasionally accompanied by such violent and long-continued efforts as to induce the premature expulsion of the fœtus, especially in women predisposed to this accident; and it becomes necessary for the accoucheur to prescribe a proper regimen in order to diminish its severity.

When the vomiting is quite easy, and the matter ejected contains no food, it will suffice to prescribe for the woman some slightly aromatic drink; the infusion of orange-flowers, or linden tea, &c. But if it should be attended with much violence, or takes place after meals, and the food is thrown off, it will then be necessary to administer cold, iced drinks, soda-water, antispasmodics, Vichy's lozenges, and particularly opium, either internally or in fomentation, to the epigastrium. The nourishment should be light, and, in the choice of articles of drink, regard should be had to the condition of the stomach. I have often found great benefit from suddenly placing a piece of ice on the epigastrium at the moment the vomiting commenced, and from recommending the patient to swallow small portions of this substance. Opium, by the endermic method, has also very frequently proved successful with me. With this view, I have placed on a blistered surface of the epigastrium a centigramme or more of the hydrochlorate of morphia; and I have successively increased the quantity to four or five centigrammes each day. If it be observed that the vomiting has a tendency to occur regularly at the same hour, it will be proper to employ the sulphate of quinine. M. Honoré has used it with success in one of my patients, in whom the severity and duration of the vomiting occasioned serious distress.

The tension and pain which usually accompany the vomiting must be combated by leeches to the epigastrium, and still better by narcotic fomentations or cataplasms; by baths, a small general bleeding, particularly if the pains extend to the loins and hypogastric region; in this latter case, in order to prevent abortion, it will be proper to administer laudanum injections until the pains cease. Authors have likewise extolled the use of wines, alcoholic liquors, cups, an anodyne plaster applied to the pit of the stomach, &c. These various means may be tried, for they may succeed in one case while they may prove useless in another; and when every kind of medication fails, they may still be employed, if it be only to encourage the patient, and enable her to attain the period of gestation, at which this trouble usually terminates spontaneously.

§ 2. *Anorexia.*

Anorexia.—Many women, during their pregnancy experience

a want of appetite or a disgust for certain articles of food, and especially for meats: the cause of this is to be attributed to a peculiar nervous condition of the stomach, or to a torpid state either of this organ or the intestines, or to plethora. If it be suspected that the anorexia proceed from the first cause, some antispasmodic infusion, ether, the anodyne liquor of Hoffman, the nitrate of bismuth, &c., will suffice to dissipate it; the torpor of the bowels requires the use of diluents, such as lemonade, whey, &c.; afterward, if necessary, evacuants, such as rhubarb, the neutral salts, or castor oil in small doses, will be indicated. Finally, emetics have been recommended in gastric derangement; but, in my opinion, great care should be used in the employment of these, which, although under other circumstances harmless, sometimes occasion serious injury to the fœtus. It will, therefore, be incumbent to omit them in weak, nervous women, and in those who have already aborted. Flatulence, which annoys many persons, and is sometimes accompanied by considerable pain, especially after eating, must be controlled by an infusion of chamomile, fennel seed, Malaga wine, &c., &c. - As to plethora, we shall hereafter state the means to be employed; but, in general, the anorexia of pregnant women, when slight, and unconnected with disease of the digestive organs, does not require much attention. Indeed, it is important that we should not attempt to oppose the peculiar taste of the patient, or constrain her to eat such diet as may be repugnant to her.

§ 3. *Acidity.*

Acidity, which is sometimes almost insupportable, frequently manifests itself in the morning, or after a meal. It is easily corrected by bitter infusions and aromatics, for example, such as the wild endive combined with orange-flowers or chamomile; Vichy's lozenges, or the calcined magnesia, succeed very well. Let three or four of the lozenges be taken daily; the dose of magnesia will vary from one to four grammes.

§ 4. *Longings.*

Longings sometimes accompany anorexia; they consist in a desire to eat unnatural, and even disgusting articles. Numerous instances of this depraved taste are cited as having been exhibited in delicate females, who, in health, were most particular as to their diet. These longings are usually of short duration, and require no special treatment, if they do not proceed from anorexia. We must, however, prevent the female from eating substances which we know to be injurious to her, while she may be indulged in those of a nutritious character.

§ 5. *Dyspepsia.*

Slow or laborious digestion, or dyspepsia, is almost always accompanied by a certain degree of constipation, which we must, in the first place, endeavour to remove; but if, after this, the dyspepsia

should continue, we must prescribe nourishment of easy digestion, and taken in small quantities. The patient should employ all those means which are proper to facilitate digestion.

§ 6. *Constipation.*

Constipation, of frequent occurrence during pregnancy, is occasioned particularly by the compression which the uterus, more or less developed, exerts on the rectum; it may also proceed from the digestive derangements of which we have already spoken, or, indeed, may occasion them. This condition requires attention, for the large accumulation of fœcal matter in the middle of the rectum requiring great expulsive effort, may excite the uterus to premature action, and thus cause abortion. The constipation must be controlled by remedies, or by a gentle and appropriate diet, according to the indications. When injections prove insufficient, we must have recourse to other means, but the use of drastic purgatives will be extremely objectionable. Castor oil, Seidlitz water, or any other mild laxative, may be employed.

§ 7. *Diarrhœa.*

Diarrhœa is met with more rarely; it may proceed simply from the sympathy of the uterus with the intestines, or from an irritation of the latter. In the first case, antispasmodics will suffice; and in the second, we must employ mild drinks, rice or gum water sweetened with the sirup of quince, and starch injections with five or six drops of the laudanum of Sydenham. The diet should consist of the mildest articles, in small quantity.

§ 8. *Ptyalism.*

Ptyalism, or an abundant secretion of saliva, is observed more particularly during the first months of pregnancy. It ordinarily continues so short a time, and presents such little inconvenience, that it requires no treatment. However, it may continue during the whole period of pregnancy, and assume a distressing character.

M. Devilliers, Jr., mentioned to me a case of this kind, which M. Danyau communicated to the medical society of the twelfth arrondissement. A lady, in her first pregnancy, had an abundant salivation until the sixth month. In her second pregnancy it continued until delivery, and even some time afterward. Having become pregnant the third time, the ptyalism was again renewed. This lady saturated from thirty to forty handkerchiefs daily with the salivary fluid. Nothing that was administered had any effect in arresting this secretion, except ice water, which seemed at one time to check it, but it produced such violent suffocation that it was discontinued.

Authors have recommended the use of magnesia, calomel, gargles of alum, &c.; but we will succeed better, not in curing, but in moderating this profuse secretion, by advising the patient to hold in her mouth a piece of gum arabic or sugar-candy.

ART. II.—DISTURBANCE OF THE CIRCULATION.

Pregnancy imparts a greater degree of activity to the circulation; the pulse is more frequent, harder, and fuller; the blood drawn from a vein is covered with a crust, as in inflammatory affections; but, however, this crust is whiter. These characters are never so marked as to constitute a sign of pregnancy, as some authors have supposed. In most cases, also, this condition, which has some analogy with plethora, merits no attention; but it requires treatment when excessive, and when it gives rise to inconveniences.

§ 1. *Plethora.*

Plethora is divided into general when it manifests itself by general disturbances in the circulation, and into local plethora when it exhibits its action upon some particular organ. In pregnancy the uterus becomes more especially the seat of this latter form.

I shall not discuss the various opinions which have been advanced as to the cause of this plethora; and I shall merely remark that it appears to me to be particularly determined by that increase of vitality which all the organs seem to undergo during gestation.

General plethora is characterized by cephalalgia, drowsiness, vertigo, dyspnœa, frequency and fulness of the pulse, flushed face, excretion of red urine, &c. General bloodletting is the chief remedy in this case.

General plethora frequently produces local plethora. It is therefore highly important to combat the former in order to prevent the serious congestions which may follow the latter, and which may exhibit themselves in the brain, lungs, and especially in the uterus, which, during pregnancy, is the organ most disposed to congestion.

But local plethora may also exist alone, and it demands particular attention. Warm baths, general and local bleeding, and diluent drinks, should be employed. If the uterus be the seat of congestion, we should endeavour to control it by energetic revulsive bleedings only.

Uterine congestion is one of the most frequent causes of abortion; it may destroy the fœtus, either by breaking up, by means of hemorrhage, the vascular relations between it and the mother, or by determining placental apoplexy, or, in a word, by soliciting the premature contraction of the womb.

Local plethora, and particularly that of the uterus, is most commonly met with in women of a sanguineous habit, and who menstruate abundantly; it also takes place especially at the periods in which the menses had been in the habit of occurring, but only during the first months of pregnancy. Physical and moral causes have a remarkable influence in the production or increase of local congestion, and this accounts for its frequent existence in women who are eminently sensitive.

The principal symptoms which characterize it are, a sense of weight and tension in the lower portion of the abdomen and groins,

and transient pains in the same region, and particularly in the loins; and, finally, if the congestion be not soon removed, there will be slight uterine contractions. The fœtus itself frequently feels the influence of the sanguineous congestion. Its movements, quickened at first, become more and more feeble, and their disappearance indicates the state of its suffering. Sometimes there is a slight discharge of blood per vaginam; and this is a circumstance which may result most seriously if prompt relief be not afforded.

I have already remarked that the best mode of controlling the evils resulting from local plethora of the uterus, consists in general bloodletting, which is both depletory and revulsive. It should be proportioned to the age of the patient; but, in general, it is better to have recourse to several small bleedings than to a very large one. We should endeavour to avoid producing syncope, on account of the convulsive movements which sometimes follow this condition.

If the active motions of the fœtus should have ceased, they will reappear immediately after the depletion. If there be a sanguineous discharge from the vagina, it often disappears under the influence of the bleeding; but this accident requires, besides, other and more detailed treatment. The patient should be placed in the recumbent posture, on a hard bed; everything like heat about the pelvis should be avoided; thus the clothes about the inferior portion of the body should be light, and the feet very slightly covered; cold injections should be administered, together with cold drinks and aliments. All physical and moral excitement should be sedulously avoided.

If this discharge occur at the time corresponding with the menstrual periods previous to pregnancy, all these precautions should be observed eight or ten days before the menstrual return, and six or eight ounces of blood should be abstracted from the arm each month. I shall speak more in detail of this treatment under the head of *Abortion*. I have frequently, by these means, carried women to their full term, who had already aborted several times; but in order to obtain this result, the patient should be extremely docile, have great confidence, and entertain an ardent desire to become a mother. The accoucheur has, in such cases, a multitude of prejudices to overcome, for it is generally supposed that bleeding is injurious during the first months, and that it should not be practised until the fourth or fifth month, at least. Indeed, it is commonly believed that these repeated bleedings are fatal to the child, and destructive to the health of the mother. In a word, the accoucheur must persevere, and not suffer himself to be influenced by these prejudices. How often, in practice, have I not been obliged to combat similar errors, and how often, too, if success had not followed my efforts, would I have been severely censured! While on this subject, I will mention the following case. I found it necessary to bleed a lady seven or eight times during her pregnancy, and all her friends became very much opposed to this treatment, and remarked that, as a consequence, she would be delivered of a sickly child, which could not

live. After the delivery, which was not without some difficulty, the friends came from all quarters to learn the result. Her husband, concealing his joy, observed to the ladies that they had predicted rightly, and that the child was exceedingly small: each one immediately exclaimed, "I knew it would be so; this treatment is murderous," &c. But what was their astonishment on beholding an enormous healthy boy!

Cautious bleeding, when sufficiently indicated, can never prove injurious; on the contrary, it is always of unquestionable utility.

Bleeding from the foot, and the application of leeches to the groins and thighs, should be proscribed, on account of the revulsive action they are apt to produce. The same objection exists against hip-baths, which, however, have been recommended in a work quite recently published.*

§ 2. *Œdema.*

Serous infiltration, ordinarily unaccompanied by pain, but in some cases excessively painful, of the cellular tissue, inferior extremities, labia majora, trunk, and more rarely of the superior extremities and splanchnic cavities, occasionally exhibits itself. It is produced by the compression which the impregnated uterus exerts on the iliac veins and lymphatic vessels, and by the obstruction occasioned in the abdominal circulation. Debility and a lymphatic temperament predispose to it. Some authors have ascribed it to plethora, and have even denominated it serous plethora. When the *œdema* is limited to the inferior extremities, or to the vulva, which is most commonly the case, it is not at all serious; but when it becomes general, the prognosis is unfavourable, because it denotes an important organic lesion, and it has also been observed that women labouring under this form of infiltration are liable to convulsions. If the *œdema* be local and inconsiderable, no treatment will be required; on the contrary, when general, it will be necessary to have recourse to diuretics, purgatives, &c., and to the treatment for anasarca. It must, however, be remarked, that this condition does not usually cease until after the termination of pregnancy. The horizontal posture would, in this case, be of essential service, but the dyspnoea which it occasions renders it impossible. As to punctures and scarifications, they should not be practised, for they are often followed by gangrene. They might be proper at the moment of labour, if the swelling of the parts interfered with the expulsion of the *fœtus*. I once saw a woman who, notwithstanding

* Pregnancy occasions most extraordinary changes in the uterine system. As soon as impregnation has been accomplished, the internal surface of the uterus becomes congested, the relations of this organ to the general economy are changed, and the numerous sympathies by which it is bound to the rest of the system are brought into action. Its sensibility is much exalted, and it undergoes important modifications in every portion of its structure. The bloodvessels become much increased, the blood concentrating upon this viscus, to enable it to perfect the fetal development. The nerves, too, increase both in number and size; these nerves are closely connected with the great abdominal plexuses, through which the local sensibility of the uterus is soon transmitted to every portion of the economy. There is, therefore, in the pregnant female, a natural susceptibility to excitement, and care should be taken to keep this condition of the system within proper limits. In *inflammatory diseases, pregnant women will bear depletion better than under any other circumstances.*—ED.

the immense infiltration of the thighs and labia, brought forth her child unaided. During pregnancy we must limit ourselves to the general treatment and local applications.

Anasarca constitutes a grave affection, which may occasion the death of the female before she has attained her full term. But, as a general rule, the œdema does not acquire a distressing development until after the period of foetal viability. If, therefore, at this time, all the means indicated above fail, and if there be reasonable ground for apprehension, we should induce artificial premature delivery, which may be accomplished by means of a small cone of prepared sponge introduced into the orifice, together with the use of ergot.—(See farther on, *Deformities of the Pelvis during Pregnancy.*)

§ 3. *Hemorrhoids and Enlarged Veins.*

These two maladies are also occasioned principally by the obstruction in the circulation in consequence of the pressure of the uterus; the hemorrhoids may likewise be the result of obstinate constipation so frequent in pregnant women. In this case, they require the use of laxatives and diluents; but frequently these will not suffice alone, and local and general baths produce much more comfort to the patient when they can be employed; to these may be added emollient lavements, opiate liniments, cream, suppositories of the butter of cacao, &c., &c. But leeches should not be applied to the tumours unless their size should be very considerable, and the pain they occasion severe, for they may act injuriously on the child. In general, bleeding, derivative rather than depletive, would be proper in case of plethora. As to cold applications and immersions, which have been recommended, although I have not had occasion to employ them, still I do not think they should be used except in feeble women, of a soft fibre, in whom gentle stimulation would not be injurious. Notwithstanding this treatment, hemorrhoids, especially those which do not bleed, sometimes continue, and do not disappear until after delivery, when the lochial discharge becomes established. Enlarged veins of the inferior extremities or vagina are not unfrequent in women who have had several children, and even in some primiparæ, towards the end of their pregnancy; they are much more serious than hemorrhoids, because, if they continue after delivery, they increase from day to day, and become much larger in subsequent pregnancies; and the tumours which they form become so considerable that they interfere with progression, are exceedingly painful, and result in ulcerations, which frequently prove incurable, &c., &c. It is, therefore, important to prevent, if possible, their increase, and this is to be accomplished by repose, the horizontal posture, having the dress loose, and the bowels in a relaxed state. If they are very large, bandages or the lace stocking should be used, when located on the lower extremities. When situated in the vulva or vagina, it sometimes becomes necessary to apply leeches in the vicinity of these parts, in order to prevent rupture

of the veins, which occasionally takes place during the passage of the fœtus through the pelvis. We shall speak hereafter of thrombus and other tumours produced by delivery.

The spontaneous rupture of an enlarged vein during pregnancy, or at the time of delivery, may prove fatal. M. P. Dubois frequently mentions, at his clinique, the case of a woman who, in rising in the middle of the night, injured her foot by striking it against a table; the hemorrhage was so abundant that she could not regain her bed, and she was found in the morning dying, being inundated with her blood.

§ 4. *Hemorrhages during Pregnancy.*

See *Abortion, Hemorrhages during Labour*, and, at the end of this work, a *Synopsis of the Treatment of Hemorrhages at the different Periods.*

ART. III.—LESIONS OF RESPIRATION.

§ 1. *Cough.*

Cough, whether it be a consequence of pregnancy or not, may exert a very serious influence; for the frequent efforts occasioned by it may determine abortion. If the cough be in consequence of the plethoric condition connected with gestation, bleeding will be indicated. If, on the contrary, it be dependant on a pulmonary affection, it must be treated according to the disease which produces it.*

§ 2. *Dyspnœa.*

Dyspnœa, which occurs at an advanced period of gestation, is occasioned by the pressure of the diaphragm against the lungs. It continues most generally until after delivery. It sometimes exhibits itself, though rarely, during the first months, and in this case it is generally due to pulmonary congestion, which must be combated by bloodletting.

ART. IV.—LESIONS OF THE SECRETIONS AND EXCRETIONS.

§ 1. *Dropsy of the Amnios.*

The secretion of the amniotic membrane occasionally becomes so much increased as to produce in its cavity an accumulation of fluid much greater than usual. There are some women who, in each successive pregnancy, are affected with this species of dropsy, and yet the cause has not been clearly ascertained. Certain authors have ascribed it to an inflammation of the amniotic mem-

* It often happens that women in the latter months of pregnancy are annoyed with irritation of their lungs, resulting in cough, which is entirely unconnected with disease, and arises altogether from the mechanical pressure which the impregnated womb makes on the diaphragm. At the end of the ninth month, when the womb descends into the pelvis, and, consequently, the pressure is removed from the diaphragm, the cough is relieved. The pupil, therefore, should distinguish between the causes capable of giving rise to this affection.—Ed.

brane, or to a derangement of its secretion in consequence of syphilis, or of some other cause capable of diminishing the action of the uterus; others, again, have traced it to a diseased condition of the ovum, existing originally in the ovarium; but as yet we have nothing positive in reference to the origin of this malady. It has been observed in women of all ages and constitutions, and at all the various periods of pregnancy. It generally, however, is not noticed until the sixth or seventh month of gestation. It exhibits itself in an extraordinary development of the abdomen, which is much greater than corresponds with the period of pregnancy. Its volume varies according to the quantity of fluid secreted by the amnios, sometimes measuring thirty to forty pints. Through the abdominal walls we can circumscribe the uterus, recognise its hardness, and at the same time become conscious of great obscurity in the fluctuation, which will serve to distinguish this form of dropsy from ascites, which likewise occasionally complicates pregnancy, for, in this latter case, the fluid may be very readily perceived. Amniotic dropsy is likewise distinguished from ascites without pregnancy by the movements of the fœtus, which, though obscure, become sensible to the mother or accoucheur. In examining the uterus per vaginam, we can readily assure ourselves that the ballottement is more easy than in the ordinary state, and the inferior segment of this organ being considerably developed, enables us to recognise the presence of a fluid. With the exception of the movements of the fœtus, these are the same symptoms that characterize simple dropsy; but this latter disease is known by the absence of all the symptoms of pregnancy.

The urine diminishes in quantity, and the limbs are less liable to infiltrations than in ordinary pregnancy; the distension of the uterus becomes oppressive, and sometimes even painful at an advanced period; but the health of the woman is less affected than in ascites, and she is in no immediate danger. Dropsy of the amnios predisposes to uterine hæmorrhage, after the labour has commenced, and renders this latter much more protracted, because the distended uterus has lost somewhat of its tone (contractility of tissue). The danger is much greater for the fœtus; if the quantity of fluid should be considerable, the uterus may readily be thrown into contraction: the labour thus commences before the full period, and abortion and death of the fœtus are the consequences. The woman may, however, reach the final term of utero-gestation. It has been remarked, that when the labour has commenced, the fœtus occupies the superior portion of the uterus, and the fluid the inferior.

This disease may become complicated with various lesions of the placenta, such as cysts, tumours, induration of a portion of this organ, &c.

In the commencement of this affection, should there be symptoms of inflammation or plethora of the uterus, local and general bleeding will be indicated; laxatives should be employed at different intervals, and they become, indeed, indispensable, while diuretics appear to have no efficacy. To these means may be added

tonics and the cold bath; and, if there be reason to suspect a venereal taint, mercurials. When the amniotic dropsy becomes so considerable as to oppress the respiration, if it should produce excessive pain, it will be necessary to evacuate a portion of the fluid by rupturing the membranes, when the period of pregnancy and state of the cervix uteri will permit; and in extreme cases, when the dilatation is not sufficient, the uterus may be punctured near the neck. In the great majority of cases, however, the means first indicated will suffice until labour commences spontaneously.

§ 2. *Hydorrhœa.*

Discharges of a limpid or yellow fluid, mixed with blood, will sometimes escape through the vulva at the different periods of pregnancy, but especially during the latter months. The quantity is variable, but may saturate several napkins during the day. Sometimes this discharge takes place but once, or it may reappear frequently, or be discontinued only for a short time. It sometimes passes out drop by drop; at other times its evacuation is sudden and abundant. Most usually it is unaccompanied with pain; sometimes, however, the sudden depletion of the uterus determines evident contractions, which will most frequently be calmed by repose.

These discharges of water at the different epochs of pregnancy are much more frequent than is generally supposed. If, indeed, they have not been entirely misunderstood, they at least have been badly explained up to the present time. Authors have attempted to show that these discharges are due to an accumulation of fluid between the chorion and amnios, and to the rupture of the chorion and caduca; to the rupture of lymphatic vessels, to hydatids, to the transudation of the amniotic liquor through the membranes, to hydropsy, to a rupture of the allantois, to a rupture of the membranes in a point remote from the orifice of the uterus, and, finally, to dropsy of the womb. Not one of these opinions is sustained by facts; they lose, on the contrary, all their value, if it be remembered that if such, in truth, were the causes of this discharge, it would almost always result seriously either to the fœtus or mother; whereas experience shows that, in nearly all the cases in which this discharge manifests itself, pregnancy arrives at its full term.

M. Nægele, in Germany, and M. P. Dubois, in France, were the first to call the attention of accoucheurs to the frequency of this accident, and to its true cause. The opinion of M. Nægele was stated in a thesis defended at Heidelberg in 1822, by J. B. Geil, entitled, *De Hydorrhœâ Uteri Gravidarum.*

He thinks that this discharge is owing to an evacuation of a certain quantity of fluid collected between the membranes of the ovum and the internal surface of the womb, and the following is his explanation of the phenomenon. The amniotic liquor, furnished by the lymphatic vessels of the uterus, penetrates the interior of the membranes by endosmosis: this opinion seems the most probable.

If a slight inflammation of the internal surface of the womb should separate a small portion of these membranes, the fluid, instead of penetrating the ovum, becomes effused at this point of separation; it accumulates, until it so far distends the womb as to induce contraction; these contractions, whether perceived by the mother or not, force the fluid to separate the membranes, little by little, until it reaches the neck of the womb, when it escapes. We can now understand how this may occur several times during pregnancy without compromising it, and without requiring any treatment.

M. Nægele, who attributes this accident to inflammation of the membranes, recommends a rigid diet and bloodletting. I cannot concur in this opinion. In my numerous observations on this subject, I have never known this accident to present any distressing symptom by itself, and the small bleedings which I have sometimes been obliged to practise have been directed rather against the consequences of the disease than against the disease itself.

Two cases, which I shall cite, will demonstrate that the discharge of water does not come from the interior of the membranes, but from the internal surface of the uterus. A woman in La Clinique passed, during her pregnancy, at different times, an enormous quantity of fluid, which M. Dubois estimated at seven or eight pints. After her delivery, she continued to pass a large quantity of water, the first day but slightly mixed with blood, and which, after the third day, became limpid; this discharge, which evidently took the place of the lochiæ, lasted five or six weeks.

Another woman, extremely infiltrated, entered La Clinique during the first months of her pregnancy, and at the periods corresponding with her menstrual returns, she lost an abundance of water. The discharge of water continued fifteen days after the expulsion of the fœtus, which took place before the full term. At the request of M. P. Dubois, this woman was transferred to the Hôtel Dieu, in the service of M. Honoré, who likewise observed this fact.

I have said that this accident by itself is not serious, and that it does not call for any special treatment;* but it sometimes becomes necessary to guard against the consequences of this discharge. Thus, although this is not common, it is occasionally accompanied with violent uterine contractions, which determine the expulsion of the fœtus. In this case absolute repose should be enjoined, and after having evacuated the rectum by means of an injection, eight, ten, or fifteen drops of laudanum, with a small quantity of water, should be thrown up the intestines, depending upon the nature of the disturbance. If there should be any evidence of plethora, a small revulsive bleeding should be ordered.

* My friend, Dr. Desilliers, communicated to me the case of a woman in whom these watery discharges had caused three successive abortions, at seven, two, and four months. But in this case, notwithstanding the abundance of the evacuation, the physician did not attribute the miscarriage to it; for the discharge was almost always commingled with blood.

§ 3. *Mucous Discharges.—Pustules.*

I have already spoken, in the article *Diagnosis of Pregnancy*, of vaginal mucous discharges, which ordinarily occur about the sixth or seventh month of pregnancy, and cease after delivery. They only require cleanliness, such as baths, ablutions, emollient injections, &c. Indeed, it would scarcely be worth while to mention them in this chapter if it were not necessary to guard the young accoucheur against an error in diagnosis which it is easy to commit, and which might, in a moral sense, affect the woman injuriously. I have been consulted in discharges of this kind, when the husband or accoucheur supposed them to be of a doubtful character; and I have decided against this opinion, not that it is always possible to establish an exact diagnosis between the discharges which result from pregnancy and those which depend on a syphilitic cause, when there are no other symptoms of infection joined to this, but because I know that these discharges during pregnancy are both abundant and frequent without infection.

I can say as much for the pustules which develop themselves on the labia majora and minora, and which are sometimes mistaken for syphilitic chancres. Pregnancy causes them, and they cease with delivery.

§ 4. *Lesions in the Functions of the Bladder.*

In proportion as the uterus becomes developed it rises above the superior strait, and draws with it the bladder, which finds itself compressed. In consequence of this pressure, there is a frequent desire to void urine; and if the neck of the bladder is likewise compressed, the frequent emission of urine is painful and difficult, and sometimes impossible. In a word, if there be not entire obliteration of the neck, the urine is evacuated drop by drop. This is called incontinence of urine.

The excess of capacity in the pelvis, which favours the descent of the womb, and the ante-version of this organ, may determine these troubles during the first months, but this is rare; they manifest themselves much more frequently at the end of pregnancy, the uterus being more or less inclined forward at this period. If the ante-version is very marked, the body of the bladder is pushed in front, above the pubes, and forms with the neck a right angle, sometimes even an acute angle, which renders the evacuation of urine and the introduction of the catheter extremely difficult. The patient may be somewhat relieved by requesting her to support her abdomen with the two hands applied on either side at the moment of urinating. The bladder in this way is relieved from the weight of the uterus, and may accomplish its functions. It sometimes becomes necessary also to raise the bladder, in order to reduce it to its natural position; but this pressure should be moderate, otherwise the difficulty of voiding the urine would be increased.

It would be well for the woman to wear a body bandage, properly adjusted, and to bathe freely; if the bladder should acquire a very considerable development in consequence of the accumulation of urine, the woman should be catheterized several times during the day.

The excessive distension of the bladder may determine inflammation and rupture of this organ. This accident would certainly have happened in the case of a woman who entered, in July, 1841, the Hôtel Dieu, in the service of M. Honoré, if great caution had not been used. The bladder nearly reached the epigastric region, so as to simulate a pregnancy at full term. She was, however, only two months pregnant. The repeated introduction of the catheter rapidly restored this woman, who voided her urine spontaneously when she left the hospital.

When this inconvenience manifests itself from the commencement of pregnancy, it is occasioned by the sojourn of the developed uterus in the pelvic cavity; it generally ceases in proportion as the uterus rises above the superior strait. Sometimes, however, this accident becomes aggravated by the growth of the uterus; under these circumstances there is no hope of cure, no matter what we do; delivery alone can accomplish this object. It is the same with retention or incontinence of urine, which takes place in the latter months.

When the urine is turbid, loaded with whitish flocculi or purulent matter, when its emission is painful, and accompanied by a burning sensation, we know that there is catarrh of the bladder; in this case, baths and emollient drinks are indicated. This affection is not unfrequent during pregnancy; I have seen several examples of it at La Clinique: in one woman, among others, it did not yield except after the repeated application of leeches to the hypogastrium.

ART. V.—LESIONS OF LOCOMOTION.

§ 1. *Relaxation of the Symphyses.*

The softening of the ligaments which unite the bones of the pelvis is of constant occurrence during pregnancy; but we should regard it rather as the accomplishment of a general law, which governs all beings, than as a necessary consequence of parturition in the female. If this softening of the symphyses is indispensable to the completion of the generative functions in certain animals, in which the pelvis is very narrow, it is not so in the human species.

In the various pelves of women recently delivered which have been submitted to my observation, I have never found this relaxation sufficiently distinct to increase the diameters of the pelvis a few millimetres, unless the woman had, during her gestation, experienced all the inconveniences which characterize a considerable separation of the bones, and which is not a physiological condition, but constitutes actual disease.

In this case, walking and standing are attended with great diffi-

culty, fatigue, and pain. During labour, the auxiliary muscles of the uterus, finding no fixed point of support in the pelvis, act painfully on the symphyses, and afford no aid to the uterus in its contractions.

The malady, the causes of which are little known, and which some authors have attributed to rachitis, commences by dull pains in the articulations of the pelvis, loins, hips, and thighs; motion becomes slow, difficult, and so painful as to render progression almost impossible. Sometimes the pains are so acute that the patient, even while in bed, cannot make the slightest movement without experiencing them. When she rises and walks she feels a sensation of great weakness and vacillation; it seems as if her body was about to slip between her thighs, and the pelvis about to separate. If the disease progresses, in consequence of some peculiar disposition, or, what is more common, in consequence of successive pregnancies, the disjunction, separation, and relaxation of the symphyses become so marked that, on moving the inferior extremities, the mobility of the symphyses is not only ascertained, but there is heard a crackling noise. Then it becomes utterly impossible for the woman to move her lower limbs; she is obliged to be raised by assistants, and the sensibility and swelling of the parts are such that the slightest touch causes pain. The consequences of this condition manifest themselves particularly after delivery, and are not accompanied by positive danger unless it proceeds from an organic vice.

The relaxation of the symphyses requires, in the first place, the most absolute repose in the horizontal position, and the application of the various antiphlogistic remedies, particularly local and repeated bleedings, baths, &c., &c., &c., should there be inflammation; but if inflammation do not exist, we must favour the consolidation of the inter-articular cartilages by the application of compresses, saturated with warm wine mixed with an infusion of roses, or with astringent decoctions of tan, quinine, solutions of the sulphate of alum, acetate of lead, to which must be added gentle, gradual, and constant pressure, by means of a body bandage composed of napkins or a large roll of flannel, or even of prepared leather. If the digestive organs do not contra-indicate it, the woman should be placed on a tonic and strengthening regimen; she should partake of roast meats, and drink some generous wine, either pure or diluted, together with chalybeates, seltzer water, &c., &c., bitter decoctions, diuretics, and occasionally laxatives. Cold sea-bathing, and the use, during the period of pregnancy, of the iodide of potash in sweetened water, in the dose of from twenty-five to fifty centigrammes, from one, and even three or four grammes daily, will frequently be found very serviceable. In this case, the patient should abstain from all acid nourishment and drinks. After delivery this treatment should still be continued, and we should, in addition, employ blisters, cautery, and moxas.

ART. VI.—LESIONS OF THE NERVOUS SYSTEM.

In speaking of the digestive disturbances, I remarked that the depraved appetite, vomiting, and cardialgia, are frequently due to a peculiar nervous condition. I merely allude to it now in order that my text may be more complete.

It now only remains for me to treat of some other nervous inconveniences which occasionally complicate pregnancy: *headache, mania, odontalgia, vertigo, dimness of sight, syncope, palpitations, cramps, pains in the loins, pains in the abdomen, dyspnœa and nervous cough, spasm of the stomach, spasm of the uterus, uterine rheumatism, convulsions.*

§ 1. *Cephalalgia.*

Headache frequently accompanies pregnancy from the commencement, and some accoucheurs have regarded it as a sign of gestation. It sometimes does not occur at all, or appears only at indeterminate periods, and has nothing fixed in its duration, intensity, or seat. I have known it to become agonizing to some women, both by its duration and intensity; and, unfortunately, our art does not possess any efficacious remedy for this affection. We may employ compresses wet with cold vinegar, baths, and bleeding, if there should be symptoms of plethora.

§ 2. *Mania.*

Mania, which occurs during pregnancy, requires no particular treatment. The accoucheur should have his patient placed in the most favourable hygienic conditions; he should endeavour to control any complications that may arise, and await the termination of delivery, which will certainly put an end to the disease: at least, such is the opinion of Esquirol. Mania, which recognises for its cause a disturbance in the functions, ceases when these functions become re-established. Pregnancy may, to a certain point, be regarded as a functional disturbance.

§ 3. *Odontalgia.*

Toothache, during pregnancy, is owing, in some instances, to a sanguineous congestion of the jaw; but most commonly it is merely nervous. In this case, there is no material lesion in the teeth; the pains are intermittent, and are seated in one or other of the maxillary bones, and extend sometimes from the alveolar arch to the neighbouring parts—to the face, temple, and ear. If there should be alveolar congestion, moderate bleeding from the commencement will be indicated; in the contrary case, anodyne gargles; applications of the hydro-chlorate of morphine, from one to four centigrammes daily, on the denuded surface of a blister; and if there should be distinct intermissions, the sulphate of quinine. If the neuralgia should be caused by a carious tooth, it should not be extracted, unless the patient suffers insupportable pain: we should wait until the patient is more advanced in her pregnancy. This

remedy should never be had recourse to until all the others have failed, for the shock produced upon the system by the severe pain of extracting a tooth may determine abortion.

§ 4. *Vertigo, Dimness of Sight, Syncope.*

These affections may be determined by a general plethoric condition of the system. In this case, bloodletting is indicated, but they may appear without any known cause. Weak, nervous women, under the influence of the slightest cause, fall into syncope. Joy, anger, an agreeable or repulsive odour, the sight of a person whom they love or who is disagreeable to them, may all give rise to this trouble. The same thing may result from the first sensation experienced of foetal life by a woman who has for a long time desired to become a mother. Syncope may take place frequently, especially during the first months, but it is not of long duration; and although it may alarm the friends, yet, in general, it is rarely followed by anything serious. It is rare, too, that in syncope there is complete abolition of the sensorial and intellectual faculties, the female always preserving a confused idea of what is passing around her. However, repeated syncope, particularly when accompanied by hysterical movements, may occasion premature delivery, which it is important for the accoucheur to guard against. During syncope, the patient should be immediately placed in the horizontal position on the ground, if there should be no couch or bed at hand; this will be the most certain means of overcoming the attack. Salts, vinegar, ether, &c., should be held to the nose, and cold water thrown with force in the face. If the succession of these fainting turns and their duration should occasion alarm, we should endeavour to prevent them by the administration of tonics, combined with antispasmodics.

§ 5. *Palpitations.*

Palpitations are often met with in pregnancy, without reference to any organic lesion of the heart; they are, in this case, occasioned by a peculiar nervous condition, which cannot be defined, and which presents nothing of a serious nature. Under these circumstances, the accoucheur should have recourse to hygienic measures. If found necessary, a small bleeding may be practised, and digitalis administered; if in powder, from five to twenty centigrammes at a dose; in tincture, ten to twenty drops daily.

§ 6. *Cramps.*

Cramps in the inferior extremities are produced by the pressure of the uterus on the crural nerves. Art possesses no means of preventing them; only, they may be palliated by frictions at the time of their appearance.

§ 7. *Pain in the Loins.*

The cause of these pains during pregnancy is entirely unknown; it is, however, supposed that it depends on the compression of the

anterior branches of the sacral nerves, which occurs during labour. But the uterus in pregnancy is too much elevated for its inferior portion to produce the compression of these organs. However, when these pains coincide with a descent more or less marked of the uterus, there will be every reason to believe that they are occasioned by the pressure on the sacral nerves.

Art is also powerless in this case, unless there should be symptoms of local plethora.

8. *Pains in the Abdomen.*

Pregnant women experience occasionally pains in different portions of the abdomen. Frequently they are determined by the active motion of the foetus, and occasion suffering in some one point of the uterus. Often, also, the female complains more of a sensation of cramp than of absolute pain: this sensation is unconnected with the foetal movements, and it may manifest itself in different points, or in one only, return by paroxysms, or continue during the whole gestation.

I once attended a patient who had in each pregnancy the same character of pain in the same portion of the womb; hence, during the first months, she considered it a certain sign of her pregnancy.

§ 9. *Dyspnœa, Nervous Cough, Spasm of the Stomach.*

These affections, of which I have already spoken in the preceding articles, may also, as I then remarked, be determined by a peculiar nervous condition. Baths, moderate exercise, and opiates are here indicated.

§ 10. *Spasm of the Uterus.*

The uterus may be attacked with convulsive action, and yet no other organ participate in the disturbance. The uterine globe is felt moving rapidly from one side to the other, and it is agitated by frequent spasms. It is readily perceived that this affection merits all the attention of the accoucheur, for its consequences are at once foreseen.

Small bleedings, baths, antispasmodics, such as camphor, in the dose of 20 to 30 centigrammes in injection, together with 10 to 30 drops of the tincture of castor, and especially laudanum, 15 to 30 drops, thrown up the bowel with a small quantity of fluid; narcotic frictions on the abdomen, with equal parts of the oil of sweet almonds and laudanum, are the means to be employed.

§ 11. *Rheumatism of the Uterus.*

M. Stoltz was one of the first who called attention to this subject. M. Dezeimeris has also published on this topic a series of articles in his journal *Expérience*. For more details, the reader can consult these articles.

Rheumatism of the uterus is produced by the same causes as rheumatism of other parts. But persons affected with general rheumatism are more predisposed to it than others; it often arises

from a rheumatismal metastasis. Pain, without any appreciable cause, is the principal symptom of this affection. There is exquisite sensibility of the uterus, without contraction, sometimes limited to one portion of the uterus, sometimes affecting the whole of the organ. In all cases, pressure and the touch increase the pain; it extends to the loins, groins, and thighs, and may change its location rapidly, as happens in all rheumatismal affections; it is liable to frequent exacerbations, variable in duration and intensity, and to remissions more or less complete.

Recto-vesical tenesmus almost always accompanies this disease, and increases its inconveniences. It results from sympathies which bind the genito-urinary organs so closely together.

This affection is not always attended by fever; but in the majority of cases, a febrile reaction manifests itself, and continues as long as the accession of pain.

The repetition of these accessions may solicit the contractions of the uterus, and determine the expulsion of the fœtus. It is therefore very important to endeavour to remedy it. The treatment consists in bleeding from the arm, laxatives, such as castor oil, salts, lotions of laudanum to the abdomen, and anodyne injections.

Revulsives on the arms, by means of mustard cataplasms, and, if the rheumatism be due to metastasis, revulsion should be practised on the place which the pain has just left.*

§ 12. *Convulsions or Eclampsia.*

Convulsions which affect women in pregnancy, labour, and after delivery, are of several kinds.

We have the *epileptic*, *hysteric*, *cataleptic*, and *tetanic eclampsia*.

The *epileptic eclampsia* is the most common; it may occur during pregnancy, labour, or as a consequence of delivery. As it presents, so far as the treatment is concerned, many important differences, accordingly as it exhibits itself at one or other of these periods, I will speak of it first as occurring in pregnancy. Epileptic eclampsia is rare during the first months of pregnancy; it does not, in general, occur until the seventh or eighth month. I, however, remarked it in the wife of a young confrère at the second month of gestation; it did not yield until after the expulsion of the fœtus. This accident is, unfortunately, more common than is supposed, particularly in hospitals. The contrary opinion, however, has been advanced. According to some writers, in two thousand cases of delivery, there were but three cases of eclampsia.

* Rheumatism of the uterus must not be confounded with another painful condition of this organ, which manifests itself occasionally during pregnancy, but more frequently in the unimpregnated female. It is *neuralgia* of the womb, which, in the unimpregnated female, is often mistaken for inflammation, dysmenorrhœa, &c., &c. It is usually met with in nervous, irritable women, and is as perfectly marked as neuralgia in any other portion of the system. I have seen several cases of this malady, and it produces most agonizing suffering if it occur during pregnancy, it is apt, if not promptly relieved, to cause premature delivery. I have never failed in removing it with *quinine*.

R Sulphate of Quinine, ʒi.

Acid Sulph. dilut., ʒi.

Aqua Pluviae, ʒviij.

One tablespoonful in a wine-glass of water three times a day.—ED.

I must have been singularly favoured, for I have observed at La Clinique more than twelve cases of epileptic eclampsia, and one of the hysteric form. I am in possession of all these observations, which are also recorded in the register of La Clinique.

This affection is characterized by muscular movements independent of the will, and not required by the wants of the individual.

1. Causes.

Essential Causes.—Pregnancy, in consequence of the changes it brings about in the whole economy.

a. Predisposing Causes.—A first delivery, especially at an advanced age, a lymphatic temperament, and particularly infiltration. In all the cases of eclampsia which I have seen, the women were more or less dropsical; rickets, peculiar conditions of the atmosphere, and individual idiosyncrasy. M. P. Dubois does not regard a sanguineous temperament as a predisposing cause.

b. Occasional Causes.—Lively and sudden moral impressions, irritation, and an acute pain. But the most evident occasional cause is the sympathetic reaction of the uterus on the economy.

2. Precursory Phenomena.

Eclampsia during pregnancy is usually announced by certain precursory symptoms; at other times it is sudden; but this is rare. It is preceded by an intense cephalalgia (Hamilton, Denman), by pain in epigastrio (Chaussier), by disturbance in vision, sparks passing rapidly before the eyes, vertigo, tingling of the ears, embarrassment in speech, &c.

3. Invasion of the Disease.

First Period.—The countenance becomes fixed, the pupils dilate, the eyes are distorted, so that the cornea is turned upward either to the right or to the left; respiration is impeded, and there is complete loss of the intellectual and sensorial faculties.

Second Period.—One or two spasmodic twitchings of the body succeed these first phenomena; one of the commissures of the lips is then drawn outward, the mouth opens slowly, the tongue projects, the head inclines to one side, the face becomes flushed, and there is a considerable rush of blood towards the head. Finally, the jaws approach each other.

Third Period.—Twinkling of the eyes; the mouth is agitated, as if the woman was muttering; the nostrils are drawn upward and outward; the chin elongates; the superior extremities are placed in forced pronation; the closed fists are applied upon the sides of the trunk; the legs are stiff, and the trunk is bent backward, as in tetanus. In fine, the spasmodic action of the body and of each muscle manifests itself; then these spasms become less frequent, and the fit terminates.

A. During the paroxysm or fit, respiration is impeded; however, sufficient air enters the mouth to produce a froth, or saliva, which escapes from the lips. The respiratory phenomena, ordina-

rily embarrassed, have but a very slight influence in the production of this; for most commonly the ribs remain perfectly immovable. The pulse is frequent and irregular, and the beatings of the heart are very rapid; they then become irregular, and cease altogether.

Some of these phenomena may be absent, and vary as to their intensity. Such, for example, as the determination of blood to the brain; the immobility of the ribs, which does not exist always, and which, consequently, does not impede respiration.

B. *After the paroxysm*, stupor supervenes; the loss of the intellectual and sensorial faculties continues; there is almost complete flaccidity of the limbs; the fingers, however, remain flexed, and sometimes also the fore-arms are contracted, but they readily yield. The lower jaw remains contracted; the eyelids are closed, and it is easy to separate them; the pupil is contracted and movable; the respiration is stertorous, and the circulation ordinarily very rapid; the pulse is frequent and irregular; if the woman turns on her side, the uterus readily inclines to that side. In fine, slight movements now manifest themselves; sensibility and consciousness return, but the memory is completely lost.* A first paroxysm is generally followed by several others, especially in pregnancy, where the original cause is not removed. After each fit, return to consciousness may take place, but most commonly, when the fits succeed each other, the woman remains, between each paroxysm, in a complete coma.

Duration of the Paroxysms.—The duration of a paroxysm may vary from one to ten minutes; it has been known to continue for half an hour. In this case, respiration and circulation are but imperfectly suspended, otherwise the woman would succumb. The duration of the stupor which follows the attack may be from seven, eight, or ten minutes to half an hour; that which follows the last attack may be prolonged to from twelve to twenty-four hours.

4. *Diagnosis.*

After the description just given, I may dispense with insisting on farther diagnosis; it will suffice to have seen this frightful malady once always to recognise it without difficulty. I will say a word in reference to the differential diagnosis of eclampsia.

A. *During the paroxysm*, eclampsia may be confounded with hysteria and epilepsy.

In *hysteria*, the movements are violent; the woman struggles, and easily changes her place; if she be on the ground, she requests to be held, in order that she may not injure herself, and she utters violent cries. There is not complete loss of intelligence; sensibility is never extinct. A frothy saliva rarely passes from the mouth. In eclampsia, on the contrary, there are no cries, no violent move-

* In some instances, there is extraordinary loss of memory connected with puerperal convulsions. A case, it is recorded, occurred in the *Hôtel Dieu* at Paris, of a woman who, in consequence of an attack of convulsions, so completely lost her memory that she not only forgot her name, but had no recollection of her marriage, or that she had been pregnant.—Ed.

ments; the patient requires to be held only that she may be prevented from falling from the bed. Eclampsia is more frequent at the end of pregnancy; hysteria at the commencement.

In eclampsia it is rare to have but one fit; in hysteria, on the contrary, there is but one.

In *epilepsy*, there is such a strong resemblance between an attack of eclampsia and epilepsy, that it would be impossible to distinguish them, if there were only one paroxysm of eclampsia. But the knowledge of what has preceded, and the termination of the disease, will enable us to distinguish these affections.

In epilepsy there is but one paroxysm; in eclampsia there are almost always several succeeding each other. However, M. P. Dubois noticed in an epileptic patient that the paroxysms succeeded each other during labour; in this case the epilepsy was changed into a veritable eclampsia.

B. *After the paroxysm, and during the stupor*, we may confound the comatose state into which the woman has fallen with apoplexy, narcotism, or drunkenness.

It is rather difficult to distinguish this comatose condition from apoplexy; however, apoplexy is rarely followed by complete use of the limbs; there is, moreover, in most cases, hemiplegia. The tongue is not bitten, nor is the saliva bloody.

The stupor of drunkenness is also very similar to that of eclampsia, but this state is characterized by the smell of the breath and by vomiting. The tongue is not bitten, and if there is froth, it is not bloody.

Narcotism can only be distinguished by the return of the paroxysm.

Thus, if only one paroxysm occurred, we might often remain in doubt; in this case, we should endeavour to learn all the antecedent relations of the patient, in order that we may be enabled to arrive at an accurate opinion.

5. *Influence of Eclampsia on Pregnancy.*

Eclampsia ceases sometimes of itself, without determining accouchement, but this is rare; most frequently, when eclampsia ceases spontaneously or the paroxysms continue, pregnancy is endangered; the fœtus is destroyed during an attack, and then necessarily be expelled. But if the convulsions do not prove fatal to the child, it is still ordinarily expelled from the uterine cavity, for eclampsia generally causes strong uterine contractions. When this occurs during the comatose state, uterine pain is announced by slight malaise; during the paroxysm it does not manifest itself by any external sign, on account of the insensibility. If pregnancy is far advanced, delivery takes place unconsciously, and the child is found dead between the limbs of the mother. At a less advanced period, the sanguineous discharge, which usually precedes the expulsion of the fœtus, indicates that this is about to take place.

6. *Possible Terminations of Eclampsia.*

Eclampsia may terminate by a rapid or slow *return to health*, depending on the intensity of the attacks, by *sudden death* during a severe paroxysm, or it may prove *gradually fatal*, in the stage of coma. In the first case, death may be occasioned by effusion on the brain following the eclampsia, the effusion being determined by a rush of blood to the head. Sudden death may also take place during an attack, when there is complete and too prolonged a suspension of respiration. It may likewise result from rupture of the uterus.

When death occurs gradually, it is the result of a serious lesion experienced by the nervous system, or it may be occasioned by functional disturbance of the lungs and heart, which have been more or less affected.

This affection may also terminate in another malady, acute or chronic, such as paralysis and metro-peritonitis.

Paralysis is ordinarily the consequence of an effusion, which has not been sufficient to occasion death; but it may also be caused by a peculiar change effected in the brain. In a woman at La Clinique, who died of hemiplegia after seventeen successive eclamptic attacks, M. Landouzy and myself made a post-mortem examination, but found no effusion, nor was there anything to explain the cause of death. It is rare, during an epidemic, for a female who has survived an eclampsia, not to be attacked with a metro-peritonitis after the birth of the fœtus. This fatal disease seems, therefore, to predispose to an affection still more alarming.

In those cases in which the patient is restored to health, a very singular phenomenon presents itself—the complete loss of memory, which returns only by degrees. When memory begins to return, it is not in reference to matters of recent occurrence, but, on the contrary, to those of a much more remote period. I saw two women at La Clinique who had suffered loss of memory; one of them had forgotten even her own name, and it was not until several days after her recovery that she could recollect it.

A lady of the Faubourg Poissonnière, whom M. P. Dubois had attended, had entirely forgotten the names of the streets, and even the topography of Paris. She was for a long time obliged to take a guide to lead her about: her other faculties were perfect.

7. *Prognosis.*

The prognosis of eclampsia is serious for the mother, but especially so for the child.

A. For the Mother.—According to Madame Lachapelle, one half of the women attacked with this affection die. The cases, however, which I have observed in the city, and at La Clinique, have given a more favourable result: only one fourth part have died. The proportion varies according to the cause of the convulsions, the period of pregnancy, and the progress of the case.*

* About four years since I attended a lady in her first confinement at full term, although she had two miscarriages previously. She had been married about two years before the birth

Convulsions are much more dangerous in women suffering from infiltration, and we know not whether this depends on some special inappreciable cause, or whether it arises from the fact that, in such cases, it is difficult to oppose, by copious bloodlettings, the consequences of these attacks—the determination of blood to the brain, and cerebral hemorrhage.

Moreover, although a sanguineous temperament is not regarded

of her child, and, previous to her marriage, was rather of a delicate habit of body. She soon, however, became exceedingly stout, and gained so rapidly in flesh during the pregnancy in which I attended her, that she became an object of great anxiety to her friends, they apprehending, from this circumstance, serious trouble at the time of her delivery. I found it necessary to bleed this lady several times during her gestation, and was obliged to have recourse to medicines with a view to keep her system, naturally torpid, in a properly-relaxed state. She had an invincible objection to active exercise, and I found it almost impossible to urge her to walk out. Added to this, her husband entertained an idea that if his wife did not indulge freely in the pleasures of the table, the fetus would be small and unhealthy. In accordance, therefore, with this theory, this inactive and plethoric lady was in the habit of partaking at night of hot suppers, &c., &c. I admonished both the lady and husband of the madness of such conduct, but without effect. When her labour came on I was in attendance, and after sixteen hours of severe suffering, she was delivered of a healthy living son. Everything went on well, much to my surprise, and things looked auspiciously for both mother and infant. I remained with this lady for two hours after delivery, and then took my leave. I had scarcely reached my house when a messenger hastened after me, requesting that I would immediately return, stating that the patient had been taken very ill, and that fears were entertained of her life. I lost no time, but proceeded at once to the house, and the scene I witnessed on entering her chamber was indeed fearful. The room was filled with female friends, who had been summoned from the neighbourhood, all endeavouring to administer relief to the suffering patient. She was then labouring under a severe attack of convulsions—the face was livid—the eyes frightfully distorted—the tongue immensely swollen, and projecting out of her mouth—the external jugular veins were prodigiously distended, and the breathing stertorous. I feared every moment death from *apoplexy*: there was no time to be lost; accordingly, I opened an external jugular vein with my lancet, and abstracted, as nearly as I could estimate the quantity, about forty ounces of blood; at the same time I ordered mustard cataplasms, their surface well sprinkled with Cayenne pepper, to be placed on the legs and thighs; and powerful frictions were kept up on the whole length of the spine with spirits of turpentine. The bleeding seemed to break the violence of the second paroxysm, which occurred precisely thirty-five minutes after the first. Soon after the second attack, I placed a drop of Croton oil, mixed with powdered sugar, on the tongue. The third paroxysm, which was exceedingly violent, occurred three quarters of an hour after the second. I entertained serious apprehensions for the life of this lady, and resolved at once on farther depletion: the force of the pulse had yielded to the first bleeding, and the danger from apoplexy was not so imminent. It occurred to me that the convulsions were kept up in this case (as I believe they are in most instances of puerperal eclampsia) by local irritation of the womb. Accordingly, two dozen leeches were applied to the hypogastric region: the bleeding occasioned by the leeches was very profuse, and certainly diminished both the violence and frequency of the attacks; but these continued at intervals, varying from one hour to one hour and a half. Feeling the full responsibility of this case, and knowing that the life of the patient was in serious peril, I requested a consultation, and immediately sent a messenger for my friend, Doctor Washington. He arrived in about an hour. The patient was still unconscious, and the attacks continued. It was agreed that two dozen leeches should be again applied to the hypogastrium, the revulsives on the extremities continued, and another drop of Croton oil administered. This treatment, most actively and perseveringly continued, rescued this lady from her impending danger. The Croton oil, in two hours after the second drop had been taken, produced copious evacuations, and appeared to exert a positive influence on the malady.

A curious fact should be mentioned here in reference to the child. About an hour and a half after the mother had been attacked with eclampsia the infant became convulsed, and had, at intervals of from thirty to forty-five minutes, four well-marked convulsive paroxysms. They yielded, however, to a stimulating warm bath.

It will now be seen that the treatment to which this patient was subjected was what may be called truly *heroic*. Her case was one which would have justified the most unfavourable prognosis; and to have hesitated or faltered one moment as to what was to be done, would, in my judgment, have been nothing more than *to let her die*. I could detail several other cases of violent eclampsia, which alone yielded to the most energetic and uncompromising depletion.

Convulsions before the delivery of the child must be treated, as a general rule, with equal activity, especially if the patient be of a plethoric habit. And if the paroxysms do not yield, *as soon as the mouth of the uterus will permit*, artificial delivery should be had recourse to.

—Ed.

as a predisposing cause to eclampsia, yet it is very certain that, in plethoric women, convulsions are often followed by cerebral congestions and paralysis.

This affection is much more serious in women who have never been previously attacked, in primiparæ, for example, because in these the expulsion of the fœtus is attended with more difficulty; it is, therefore, more alarming as pregnancy is less advanced, for then the neck of the womb has not undergone the changes necessary to permit a rapid delivery. It is also more dangerous after delivery, for we are deprived of having recourse to the treatment *par excellence*—the extraction of the fœtus.

In a word, it is the more dangerous as the attacks are more prolonged, as they occur at shorter intervals, as the coma which succeeds them is more absolute and protracted. But in nervous women, when the attack has been occasioned by some mental emotion, and in hysterical, epileptic, and cataleptic women, the eclampsia is less serious; it is also much less grave when the advanced period of pregnancy and labour enables us promptly to deliver the woman.

B. *For the Child*.—As regards the child, the prognosis is of the most serious character. When the attacks are repeated it most usually dies, and it sometimes succumbs after a short and slight paroxysm. In the first case, the death of the fœtus is easily explained. The maternal circulation being suspended, the fœtus receives blood but imperfectly elaborated. But in the second case, when the child perishes in consequence of slight attacks of eclampsia, without the mother's being asphyxiated, its death must be attributed to another cause. The peculiar stiffness of the still-born fœtus after eclampsia, the meningitis, and convulsions which almost always ensue and occasion the death of the child, if it should have been born alive after an attack of eclampsia, are strong presumptive evidences that the child received the germ of this affection from the mother while in utero; and as no nervous communication exists between the mother and the child, it must be admitted that the blood serves as a vehicle for the principle of the disease.

8. *Post-mortem Results.*

In the autopsy, no lesion is discovered which can explain the intimate nature of the malady.

Thus, when a female dies some time after the last paroxysm, if the determination to the head have not been considerable, we find absolutely nothing. If she have died during the attack, when the cerebral congestion is very great, we shall find the membranes injected, and effusions to a greater or less extent. But who does not see in these lesions the consequences of eclampsia, and not the original cause?

I am aware that quite an opposite opinion is held by M. Moreau. This accoucheur regards the cerebral congestion as the first cause of the eclampsia, and he insists with energy on the antiphlogistic treatment, abundant bleeding, even to syncope; but to my mind

the opinion of M. P. Dubois appears much more rational, and I think, with him, that, in the actual state of science, eclampsia should be regarded as a neurosis, and the lesions met with after death as secondary effects due to the determination of blood towards the brain during the paroxysm, and not as the cause of the disease. According to this view of the subject, the treatment should consist of revulsives, sedatives, and antispasmodics. The antiphlogistic means, which I am far from proscribing, should be employed conjointly with the other remedies, with a view to control the consequences of the eclampsia, and not with the hope of arresting its progress.

9. *Treatment of Eclampsia.*

The resources of our art are, unfortunately, too often powerless in checking the attacks; but they may frequently prevent them by removing the predisposition. The treatment is, therefore, divided into *preventive* and *curative*.

A. Preventive Treatment.—Infiltration being one of the most common predisposing causes, we should combat it, especially when it is accompanied with pain in the head, disturbance of vision and ideas, blindness, and deafness. Bloodletting, derivatives, baths, diuretics, and antispasmodics are indicated. The patient should use a drink of the wall pellitory, to which may be added from fifteen to twenty grains of the nitrate of potash. She should take white wine at her meals, and every morning a pint of whey with some nitre in it; at night she should make use of a diuretic potion, composed as follows:

R. Honey of squills, ʒss.
Nitric ether, ʒj.
Laudanum of Sydenham, gtt. v.
Distilled water of valerian, ʒiij.
Sirup des cinque racines, ʒj.

Derivatives should be directed especially to the intestinal canal; and seidlitz-water, calomel, in the dose of twenty-five, forty, to fifty centigrammes, should be preferred. In injections, we should administer the decoction of squills united with eight or ten grammes of mercurialized honey, or sulphate of soda.

The application of a cataplasm, sprinkled with nitrate of potash, to the hypogastrium during the night, will frequently be found serviceable.

If there should be pain in the epigastric region, the application of leeches will become necessary, and a small bleeding from the arm should also be practised.

B. Treatment during the Attack.—The first care of the accoucheur should be to see that the patient, during the paroxysm, does not fall out of bed, and likewise to place the tongue within the mouth, for fear it should be bitten. If this cannot be done, the handle of a spoon, covered with linen, should be introduced between the jaws to keep them asunder; but cork should not be employed for this purpose, as it may be broken under the effort

of the teeth. However, if this substance be used, it must likewise be covered with linen. If the bladder be in a state of distension, it must be evacuated, and cold water should be thrown upon the face.

C. *Treatment after the Attack.*—After the attack has passed over, the patient should be bled from the arm, to an extent proportional to the general strength. Bleeding is proper under all circumstances; whether there is plethora or not, and even when the patient is labouring under infiltration, it will be found the best sedative for the nervous system. Ten leeches should be applied behind each ear, and mustard cataplasms to the inferior extremities; but care should be had not to allow them to remain on more than ten or fifteen minutes, and immediately to remove them to some other part. The insensibility of the patient will prevent our perceiving the effects of the sinapisms, and if, on this account, we permit them to be applied for a longer time, they may occasion eschars of the integuments. At the same time, an enema should be administered, composed of a handful of table-salt in solution; ice and pump water should be kept applied to the head in a bladder, and if the patient can swallow, she should be made to take the following antispasmodic potion:

R. Sirup of orange flowers, ℥i.
 Distilled water of lettuce ℥ij.
 Distilled water of linden, ℥ij.
 Sulphuric ether, ʒss.
 Laudanum of Sydenham, gtt. x.

The best antispasmodic would be to place the patient in a warm bath for some time, whether in a state of stupor or during the succession of the attacks; but the greatest advantage would be derived from this remedy if had recourse to during the intervals of tranquillity.

No matter how rapid the succession of attacks may be, or how serious the state of the patient, if pregnancy be not far advanced we must not think of delivering, although this is certainly the most effectual curative means, for the remedy would be more dangerous than the disease; the condition of the cervix uteri, especially in a primipara, not permitting, except with great difficulty and danger, the rupture of the membranes. Neither should we have recourse to ergot: it would probably aggravate the difficulty, and, moreover, it would prove useless.

At a more advanced period, we may bring on premature artificial delivery by means of a small cone of prepared sponge introduced into the neck of the uterus through a speculum, or by the rupture of the membranes, if this be possible. But, even in this case, the expulsion of the fœtus will not be instantaneous, and yet, in order to obtain proper results, it is desirable that the evacuation of the uterus be rapid.

In a word, it will be necessary to employ the remedies indicated above, and not attempt to empty the womb except in cases in which the extraction of the fœtus can be accomplished with facility. (See *Eclampsia during Labour.*)

Hysterical convulsions are much less frequent than the preceding: they scarcely ever manifest themselves except during pregnancy, and in the first months only. They are produced by the same causes as the first, but they are much less serious. They may be readily distinguished from epileptic convulsions (although nearly all the symptoms are the same), inasmuch as there is not complete loss of the intellectual and sensorial faculties. They are extremely rare during labour. They are to be treated in the same way as hysteria.

Cataleptic and Tetanic Convulsions.—Nearly the same symptoms as in the epileptic form, but there are more automatic movements. They are rare at all the periods of childbirth, and require nearly the same treatment as eclampsia.

ART. VII.—DEFORMITIES OF THE PELVIS.

In order not to depart from the object which I have proposed in a practical work, I shall pass over rapidly the different classifications given by authors, and speak particularly of the diagnosis of pelvic deformities, their influence on pregnancy and labour, and the indications they present during gestation. It is during pregnancy especially that deformities of the pelvis become objects of solicitude to the accoucheur, when they are of such a character as to render delivery at full term impossible without the interference of cutting operations. At this period only can he guard against the deplorable consequences of these deformities.

The pelvis is deformed whenever its dimensions depart from the natural standard. However, a few lines more or less in the measurement of the diameters do not, properly speaking, constitute a deformity, for there is nothing in these cases, either during pregnancy or labour, which will give us cause to suspect the existence of this condition.

The pelvis should be considered deformed only when its configuration occasions difficulties in the accomplishment of parturition.

§ 1. *Causes and Classification of Pelvic Deformities.*

Rachitis and malacosteon are not the only causes of pelvic deformities, as was formerly supposed.* Other influences may, without the concurrence of these two maladies, alter mechanically the shape of the bones in infancy and in debilitated subjects. According to the causes which produce them, we may classify the deformities as follows:

1st. *Deformity by augmented capacity, with perfection of form* (excess of amplitude).

2d. *Deformity, with diminution of all the diameters, and perfection of form* (absolute diminution).

3d. *Deformity from rachitis or malacosteon* (relative diminution).

4th. *Consecutive deformities determined by previous deformity of some other part of the skeleton* (relative diminution).

* See F. C. Nægèle, *Principal Deformities of the Pelvis*, translated by A. Danyau, Paris, 1840, in 8vo, Fig.

§ 2. *Deformity from Excess of Amplitude.*

Increased capacity of the pelvis is not always, as we might suppose, a favourable circumstance; it may expose the woman to grave consequences during pregnancy and labour, and even in the unimpregnated state.

In the unimpregnated state, for example, the margin of the pelvis does not afford the uterus a proper support, and it is therefore more exposed to displacements; either prolapsion, ante-version, or retro-version. These accidents, which are serious in the unimpregnated condition, exert occasionally a disastrous influence during pregnancy and labour.

A. Prolapsion.—During pregnancy, the uterus having abundant space in the pelvic cavity, is not solicited to rise above the superior strait, in proportion as it becomes developed. It may even remain below this strait after it has acquired a considerable volume; the bladder and rectum are more or less pressed upon, and hence there is more or less difficulty in the excretions. Frequently the inferior extremities become infiltrated in consequence of obstruction in the circulation; and hemorrhoids are sometimes produced by the same cause.

In this case, most commonly the superior strait is proportionally as large as the cavity; the uterus ascends, the symptoms cease, and they do not reappear until the end of pregnancy, when the inferior portion of the womb again descends, which takes place especially in presentation of the head.

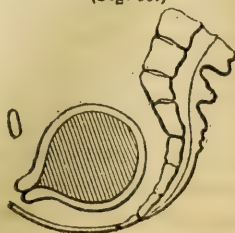
But it may happen that the superior strait, not participating in the enlargement of the rest of the pelvis, retains the uterus in the cavity. This organ, pressed on all sides, increases, by its volume, the difficulties already produced by the obstruction in the circulation and excretions. The woman experiences a sensation of insupportable tenesmus about the bladder and rectum, painful tractions about the groins, loins, and umbilicus; she can neither stand nor walk. Occasionally a discharge, more or less abundant and fetid, takes place through the vulva; all the symptoms of uterine inflammation are present, and the woman would die if abortion did not commonly terminate this condition of things.

B. Ante-version—Retro-version.—In this case the uterus may incline forward or backward, displacements to which are given the names of ante-version (fig. 58) and retro-version (fig. 59); this must not be confounded with ante-flexion and retro-flexion. In the

(Fig. 58.)



(Fig. 59.)



former case, the uterus lies horizontally ; its body and neck have the same axis ; in the latter, the body is more or less flexed on the neck (fig. 60, 61).

(Fig. 60.)



(Fig. 61.)



This accident usually occurs in the first three or four months of pregnancy. Excess of capacity in the pelvis is a common cause of it ; but other circumstances may determine its production. Thus, it may take place gradually, in consequence of continued pressure exercised by the viscera on the womb ; or suddenly, in consequence of a fall on the back, or of some violent effort.

When this displacement is slight, it is frequently unperceived, and the womb becomes righted in proportion as it rises up ; but when it is well marked, the uterus cannot ascend above the superior strait, and all the phenomena described above manifest themselves.

Diagnosis.—In prolapsion, the finger comes in contact with the cervix on the floor of the pelvis, and it soon perceives that the uterus fills up the entire cavity ; in ante-version, the finger reaches immediately the fundus of the womb ; and the neck, situated in the concavity of the sacrum, is often inaccessible.

In ante-flexion, the body occupies the same place, but the finger readily reaches the cervix, which is not displaced ; and it may be easily carried to the fold which separates the body from the neck.

In retro-version, the neck presents first ; it is even often visible by separating the lips of the vulva ; the fundus occupies the entire concavity of the sacrum.

In retro-flexion, the fundus occupies the same place ; the neck is situated naturally, and the finger, in passing beyond the neck, can reach the angle formed by this portion and the body of the organ.

Indications to be fulfilled when the Pelvis is Deformed by an Excess of Amplitude.

If this species of deformity should be detected, especially if there be prolapsus of the womb, the female should be made to keep the horizontal position from the commencement of pregnancy until after the fifth month. The accoucheur should also, from time to time, make a vaginal examination, to ascertain whether the uterus assumes an improper direction, and whether it continues movable in the pelvic cavity. If necessary, the ascent of the womb may be favoured by means of a fine sponge, having the form of a mushroom. The sponge should be so placed as to allow the neck of the uterus to rest in its cavity, in order that the organ may be thus maintained in its proper position. This sponge should be withdrawn by means of a thread attached to it, then washed and replaced, at least every two days. While in situ, it may be moistened and washed by means of slight astringent injections, repeated several times during the day. However, notwithstanding all these precautions, it should not be permitted to remain more than three

or four days without being properly cleansed. In this way the ascent of the uterus above the superior strait will be promoted in proportion as it becomes developed, and thus serious difficulties will be obviated during pregnancy.

But when this disposition has not been suspected, and no proper precaution taken, the impregnated uterus remains in the cavity, and frequently in a more or less marked state of ante-version or retro-version. If the pains and inconveniences resulting from these displacements are such as to induce the patient to seek advice, the accoucheur, the bladder and rectum having been emptied, should endeavour with the fingers, or the whole hand if necessary, to replace the womb, and raise it above the superior strait, where it will afterward continue of its own accord. In ante-version, the body of the organ should be raised by means of a small director, its extremity being covered with a tampon of linen, while, with the index finger of the other hand, the accoucheur should endeavour to bring the cervix into the centre of the pelvic cavity. In retro-version, two or three fingers should be carried posteriorly, with a view to raise the fundus of the organ, while efforts should be made to bring down the neck, which is in front.

Sometimes this reduction presents very serious difficulties. If these accidents have determined at first only slight pains, for which the woman has not thought proper to ask advice, the uterus may have become so much developed as to be firmly fixed in the cavity. M. Evrat has employed, in similar cases, the director which I mentioned above; he introduced it into the rectum, and raised the fundus of the womb, while with the index finger he pressed on the neck, which was in front. After the reduction, the patient should be kept quiet for about a month; and if any evils should result from these displacements, or from the manipulations necessary to correct them, they must be met by baths, bloodletting, &c. But it will scarcely ever be necessary to employ any other means than the sponge already spoken of. Should the reduction be impossible, we must induce abortion, either by rupturing the membranes in the case of simple prolapsion and retro-version, because the neck, under these circumstances, is quite accessible; or by puncturing the uterus through the vagina in the case of ante-version, where the neck cannot be reached.

This species of pelvic deformity requires also the attention of the accoucheur during labour and after delivery; I will allude to this hereafter.

§ 3. *Deformity from diminished Capacity.*

Pelvic deformity from diminished capacity is one of the greatest accidents which the accoucheur, under any circumstances, can be called upon to remedy. In order that spontaneous delivery may be accomplished, it is necessary that proper proportions should exist between the fœtus and pelvis. When these proportions are not present, an operation becomes indispensable. If the disproportion be slight, the difficulty may be overcome without much danger

either to the mother or child; but, in the contrary case, the accoucheur has to choose between two extremes equally embarrassing—to diminish the volume of the fœtus, or enlarge the canal through which it has to pass.

I shall return to this subject when speaking of the indications presented by pelvic deformities during labour; but will now merely remark that, between these two alternatives, the choice, in my opinion, cannot be doubtful in cases in which, by destroying the child, it will be possible to save the mother.

At present, I have only to treat of the influence of deformed pelves on pregnancy, and the indications to be fulfilled at the various periods of gestation.

The divisions and subdivisions of this species of deformity have been unnecessarily multiplied. In practice, these subdivisions are useless; they only serve to embarrass the pupil. I shall, therefore, limit myself to the description of the two principal forms of contracted pelvis. I shall insist, however, on the causes and diagnosis, which will enable me to point out more particularly the indications.

Pelvic deformities from diminished capacity are divided into two kinds: *deformity from absolute diminution*, and *deformity from relative diminution*.

1. *Absolute Diminution (Velpeau).*

This species of deformity is distinguished by the regularity of form; it is in all respects similar to a well-conformed female adult pelvis, except that the dimensions are not the same; but the texture of the bones, their form, colour, and general solidity do not differ from the healthy state. But there is a remarkable difference in the pelves of rachitic individuals.

M. Nægele has four in his collection, taken from women in whom it was necessary to perform the Cæsarean section, or embryotomy.

Three of these pelves belonged to women of ordinary stature; the fourth to a dwarf thirty-one years of age, well conformed, and measuring in height thirty-nine inches.

M. Nægele admits several kinds of this deformity, and for farther details I refer the reader to his work, entitled *Principal Deformities of the Pelvis*, of which M. Danyau has just made an excellent translation.

A. *Causes of this Variety.*—Most writers have heretofore supposed that a deformed pelvis with *absolute diminution* was produced by an arrest of growth, in consequence of which the pelvis preserves after puberty the characters of infancy. But the description I have given of this pelvis, according to Nægele, shows that it is in every respect similar to the female adult pelvis, the same conformation of the straits, pubic arch, and separated bones. It differs only in its diameters, and is far from resembling the pelvis of an infant. Neither has it anything in common with the pelves of rachitic persons; and it is met with in women whose skeletons present no trace of this disease. The cause of its production we do not know.

2. Relative Diminution (Velpéau).

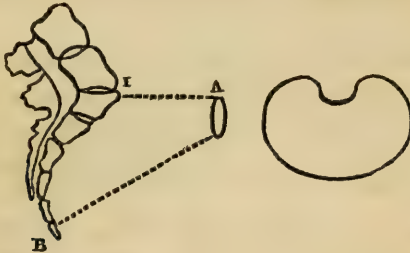
M. P. Dubois has reduced all deformed pelvises of the contracted character to three types: *flattening from before backward*; *sinking down of the anterior and lateral parts*; *compression from one side to the other*.

These deformities may affect the straits separately or simultaneously.

A. *Flattening from before backward*.—In this form of pelvis, it is generally the sacrum that sinks down, rarely the symphysis pubis. This contraction may affect the superior strait, and present this form. The diminution in the antero-posterior diameter of the superior strait (A I) is almost always accompanied with an increase of the corresponding diameter of the inferior strait (A B), unless the concavity of the sacrum should be very marked, in which case both these diameters would be deformed; that of the cavity (A C) would gain in extent from before backward.

(Fig. 62.)

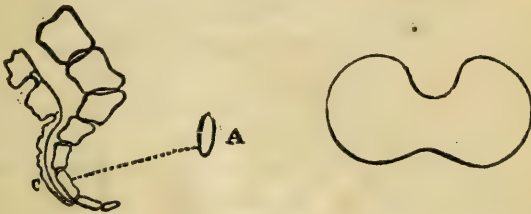
(Fig. 63.)



Although the sinking down of the symphysis is rare, yet it may coincide with that of the sacrum, and then the pelvis presents the figure of 8.

(Fig. 64.)

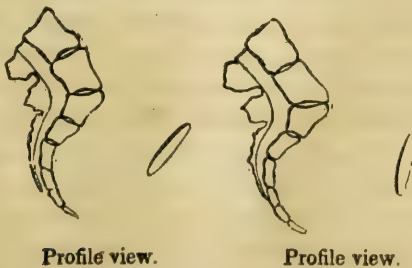
(Fig. 65.)



If the symphysis be too long vertically (fig. 67), the antero-posterior diameter of the inferior strait is deformed, and this deformity is still more remarkable when the symphysis is oblique inwardly (fig. 66).

(Fig. 66.)

(Fig. 67.)



Profile view.

Profile view.

It is rare that the immobility of the coccyx constitutes a serious obstacle to delivery, when the pelvis is otherwise well conformed.

B. Sinking down of the Anterior and Lateral Walls.—The compression of the antero-lateral walls contracts the oblique diameters; this species of deformity is not very rare, yet it is more so than the preceding. The pelvis, in this case, may be deformed on one side, or on both sides at once.

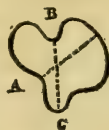
In all cases, it is the point corresponding to the cotyloid cavity which has been depressed.

If this depression have taken place on both sides, the pelvis presents the form of a club at cards (fig. 68); but usually the deformity is greater on one side than the other, and gives to the superior strait this form (69); the oblique diameter (A I) is very much contracted; but the antero-posterior diameter (B C), although having lost nothing of its length, and presenting sometimes even more than four inches, will not permit the descent of the head. In fact, this latter cannot be contained in the space presented by the symphysis pubis.

(Fig. 68.)

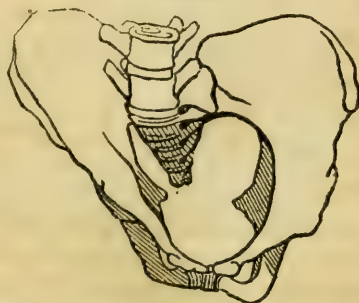


(Fig. 69.)



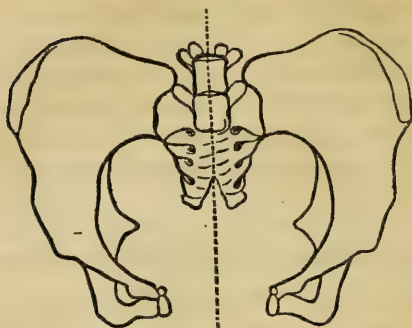
It is to this species of contraction that we are to refer the oblique pelvis of M. Nægele; the characters of his pelvis are as follow: ankylosis of one of the iliac bones with the sacrum, arrest of growth, or defective growth of half the sacrum, and the sacral foramina of this side small.

(Fig. 70.)



The other side, which appears to be naturally formed, is, however, not so. Thus, in removing the deformed portion of the pelvis of this kind, we cannot, with the other two halves which appear well formed, make a normal pelvis. There remains a space of more or less extent between the pubic bones.

(Fig. 71.)



The strength of the bones, their size, and internal structure are the same as those of the healthy bones.

This species of conformation presents a great advantage, for one side gains in extent what the other has lost, and this will permit the accomplishment of labour. Moreover, in this case, if any circumstance should render extraction of the fœtus necessary at the time of labour, the accoucheur will be enabled to deliver by the feet, although, in general, a pelvic deformity contra-indicates this operation.

C. *Compression of the Lateral Walls.*—The lateral compression of the pelvis affects the configuration of the inferior strait and cavity more frequently than that of the superior strait. The tuberosities of the ischium approximate, and the pubic arch assumes the form of the male pelvis. When this compression has altered the form of the superior strait, it is the transverse or bis-iliac diameter which becomes contracted. The antero-posterior diameter, on the contrary, increases, the pubes project forward, and the sacrum falls backward. When the effect has been slight, the superior strait is round; if the compression has been greater, it is oval (fig. 72); finally, this compression may have been more considerable on one side than on the other; in this case, the strait assumes this form (fig. 73).

(Fig. 72.)



(Fig. 73.)



I have now given all the details with regard to the three species of malformation by *relative diminution* necessary to establish the practical deductions which I shall hereafter make. I should, however, add, that these three types sometimes become united, and then all the diameters of the pelvis are deformed, which explains why each author has admitted a multitude of divisions and subdivisions altogether useless in practice. In most cases, it is not the exact degree of contraction, unless it should be very marked, that will vary

the means to be employed, but rather the difficulties of expulsion, for we must take into account also the size of the child's head. One woman, for example, will be delivered by means of forceps, having but three inches and a quarter, because her children are small; while in another, delivery cannot be accomplished by these means, and it will be necessary, after unavailing efforts, to have recourse to another operation, because the female brings forth large children.*

§ 4. *Causes of Pelvic Deformities.*

For a long time, rachitis and malacosteon were regarded as the only causes of pelvic deformity. The researches, however, of Nægele, P. Dubois, Guérin, Bouvier, Sédillot, &c., have shown that, in cases in which rachitis does not exist, certain mechanical causes have produced malformation of the pelvis, when its powers of resistance were slight, in infancy or in feeble subjects. M. Nægele has also pointed out causes the intimate nature of which is as yet unknown.

1. *Rachitis and Malacosteon.*

Rachitis and malacosteon, although very distinct in their anatomical characters, produce, however, the same results. We shall examine their influence on the deformities of the pelvis, without distinction. Rachitis and malacosteon have not altogether the same influence on the osseous structure; the first, which is peculiar to infancy, is often accompanied by a certain degree of softening, but its principal characteristic is an arrest of growth; while in malacosteon, which only occurs in the adult, the softening is much more evident, but the bones have acquired their full development. These two affections are, therefore, the original causes of the various pelvic deformities; but to these causes we must add the action of an external force, without which no malformation would exist.

In rachitis, the softening is never so great as to produce deformity in the bones by their own proper weight. This, however, may occur in some rare cases of malacosteon. Thus, the deformities are to be attributed to an external force acting as a secondary cause, the muscular force, for example, and, so far as the pelvis individually is concerned, the weight which it has to sustain.

In the erect position, the weight of the body transmitted from the lumbar vertebræ to the heads of the thigh bones, following two diverging lines, the resistance which the inferior extremities oppose to this weight has a tendency to depress from above downward

* Occasionally, when there is no contraction of the pelvis, there is a delay in the delivery, for which the accoucheur cannot at first account. This delay may be due to a peculiar conformation of the spine of the ischium; and if it should escape attention, serious consequences may ensue. This spine is occasionally (though I believe rarely) curved inward, and forms a hook, which offers an irresistible barrier to spontaneous delivery. By an attentive exploration of the pelvis, the accoucheur will be enabled to detect the cause of the difficulty; and as this difficulty does not manifest itself until the head has well descended into the pelvic cavity, the indication is to deliver by the forceps.—ED.

the posterior portion of the bony circle of the pelvis, and to elevate the anterior portion ; and again, this force, at the same time that it pushes the sacrum downward, pushes it also forward, and the portion of the pubic bones near the cotyloid cavity, under the influence of this cause, approximates the sacro-vertebral angle. This will explain why the deformities are so much more frequent and marked at the superior strait, and why the antero-posterior and oblique diameters are more frequently contracted than the others.

If the weight should act more particularly upon one side, the deformity will be much more evident in this direction. Such will be the case when one of the lower extremities is shorter than the other. If to this be added the influence of habit, and the nature of the duties the woman performs, it will be readily understood how the deformity may affect more especially one side of the pelvis, and thus constitute the oblique pelvis of Nægele.

In this latter case, however, in explaining how the sacro-vertebral prominence approximates one of the cotyloid cavities by being directed from above downward and from behind forward, and how, likewise, one of the cotyloid cavities may approximate the sacrum and be elevated or depressed at the same time, nothing has been said of the anchylosis of the sacro-iliac symphysis of the affected side ; and this, according to Nægele, is the pathognomonic character of the oblique pelvis. Is this anchylosis congenital? Is it determined by an inflammatory action of the articular surfaces, supervening after infancy? M. Nægele has not yet satisfactorily explained this point ; he thinks, however, that this anchylosis is occasioned by an arrest of growth. The lateral compression, or the contraction of the transverse diameter, is rare ; it is combined almost always with the antero-posterior compression, in order to produce malformation of the oblique diameters. It is occasioned by the children lying for a length of time on the same side, or by the pressure exerted on one of the hips by nurses, who carry the child always on the same arm ; this circumstance may also determine the elevation and the inward compression of the tuberosity of the ischium. Finally, if the child remains habitually in the sitting posture, the sacrum curves upon itself, the coccyx approaches the sacro-vertebral prominence, which likewise is pushed down, and the two antero-posterior diameters of the two straits are deformed.

2. *Previous Malformation of some other Portion of the Skeleton.*

A. *Curvature of the Spinal Column.*—Curvature of the spine is rarely accompanied with marked deformity of the pelvis. In sixty-nine cases of deformity of the spine noticed by M. Bouvier, fifty-seven women presented a perfectly natural pelvis ; in twelve only was it malformed ; and, moreover, in these twelve, the inferior extremities were more or less curved. This latter circumstance, on the contrary, is intimately connected with deformity of the pelvis, and the fact is so constant that we may, on the inspection alone of the legs, ascertain the condition of the pelvis, while

the majority of women who are affected with curvature of the spine only, bring forth their children with as much facility as others. I have frequently had occasion to notice this circumstance.

Although curvatures of the spinal column cannot be regarded as a cause of pelvic deformity, and although this rarely accompanies these contractions, it is, however, true that they may exert an unhappy influence on the degree of contraction, and on the form of the pelvis. Thus the curvature of the vertebral column may cause the pelvis to be thrown from before backward, particularly at the angle formed by the junction of this column with the sacrum.

B. Lesions of the Inferior Extremities.—As I have already remarked, incurvation of the inferior extremities almost always accompanies deformity of the pelvis, and, moreover, it may occasion, or at least increase them. Thus, when the limbs are of unequal length, the pressure which they exert on the cotyloid cavities is unequal, and may increase the deformity of one side of the pelvis. When there has been no previous malformation of the pelvis, shortening of one of the limbs may determine deformity, whether the shortening be the result of a fracture, luxation, or of atrophy, more particularly if any of these accidents should occur before the pelvis has attained its full development.

Congenital Luxations of the Femur.—It cannot be denied that congenital luxations of the femur ordinarily exert a certain influence on the configuration of the pelvis; but this influence is so slight in most cases, that parturition is not affected by it; and there does not exist a solitary example of a congenital luxation of the femur without rachitis, producing a deformity of the pelvis requiring the use of instruments,

§ 5. *Diagnosis of Pelvic Deformities.*

The accoucheur may be consulted by a mother anxious to know whether the pelvis of her daughter is such as to justify marriage. His opinion may also be desired by a female pregnant for the first time, in whose mind there may exist fears as to the formation of her pelvis. In this case, he will have to reply to the following questions:

Is delivery at full term compatible with the safety of the child? What influence will the deformity have on pregnancy? What precautions are necessary to guard against accident until the completion of gestation, and to facilitate delivery?

When the accoucheur states that delivery will not be possible without the interference of art, he will then be asked whether this interference will compromise the life of the mother or child; and whether this operation cannot be avoided by some process during pregnancy, either saving the life of both mother and child, or sacrificing the child for the benefit of the mother?

In order to answer these questions satisfactorily, and to furnish himself with a rule of conduct in advance, it will be necessary for the accoucheur to know precisely the condition of the pelvis, and the dimensions of the diameters, &c.

However, it must not be supposed that this mensuration can be made with mathematical accuracy; our means will not enable us to obtain this precision; but even if we could, the object we have in view would not be completely accomplished, for, in order to arrive at a rigorous appreciation of the consequences of the deformity and the operations it might require, it would be necessary also to know the exact size of the fœtus, which is not possible.

Happily, in practice, an approximation as to the absolute condition of the pelvis will suffice, and it is easy to arrive at this result. With this view, the accoucheur should, in the first place, learn the previous history of the patient in infancy and youth, and afterward proceed to an external and internal examination.

When the accoucheur is called upon to pass an opinion as to the natural or unnatural conformation of a female, he should, says M. P. Dubois, inquire minutely into the antecedent condition of this woman during her infancy and youth. The history of early life will often, of itself, cause him to suspect the state of the pelvis. He should address the following questions to the parent:

What diseases was the infant affected with? At what age did they manifest themselves? At what age did the child walk? After walking, did it appear weak in the inferior extremities? Was the erect position possible? Was it easy? Were the articulations large?

If all these phenomena appeared in infancy, it is highly probable that the pelvis is deformed; and, moreover, it may be affirmed that the symptoms arose from rickets, a disease peculiar to infancy. It commences rarely before eighteen or twenty months, and very seldom after thirteen or fourteen years of age. If there should be curvatures of the spinal column and extremities, it will be almost certain that the pelvis is deformed; and if the curvature commenced in the inferior extremities, we may conclude that it is owing to rachitis, for this disease exerts its influence first on the tibias, then on the bones of the thighs, pelvis, and vertebral column. On the contrary, if the first ten years have been passed without disturbance of the general health, then curvatures must be attributed to malacosteon, especially if the curvature of the spine has preceded that of the lower limbs. Deformity of the spine may exist alone; then we may legitimately hope that the pelvis is not contracted. Experience, indeed, proves that the vertebral column may be considerably curved without the pelvis participating in the deformity, when the inferior extremities are straight; and that, in general, curvatures of the extremities alone accompany pelvic malformations.

2. *External Examination.*

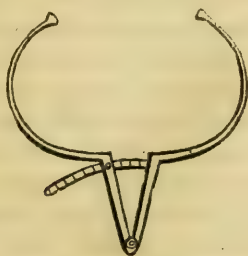
The preliminary researches terminated, the accoucheur will commence the external examination with becoming decency and circumspection. This examination may be made while the patient is either in the standing or recumbent position, but always through her linen. According to M. Velpeau, if the carriage of the woman

be easy, free, and steady ; the inferior extremities straight ; the hips on the same level, wider than the base of the thorax, and well rounded (the width of the hips is double the transverse diameter of the superior strait) ; the great trochanters well separated ; if there be no falling in of the sacrum at its point of junction with the vertebral column ; if the symphysis pubis is neither too compressed, nor too prominent, nor too long, there will be good reason to infer a proper conformation. If the patient should be lame, the accoucheur will examine whether this depends on the greater curvature of one limb than the other, on the flattening of the antero-lateral wall, or an old or recent disease of the coxo-femoral articulation, or on a former fracture, &c. If this examination should enable the accoucheur to recognise some of the symptoms of pelvic deformity, he should not be content with those which afford merely presumptive evidences, but should have recourse to other means, by which he will arrive at more precise knowledge.

Indeed, it is not on simple probabilities that the accoucheur is to interdict the marriage of a young girl, or determine, during pregnancy, to perform an operation, more or less hazardous to the child, with the view of protecting the mother against the dangers of delivery at full term. He will likewise require much more positive data at the time of labour, to guide him in the choice of the operation necessary to be performed.

To arrive at this result, authors have proposed a variety of instruments, which are applied either externally or internally ; but the finger is undoubtedly the best pelvimeter. However, the calipers of Baudelocque, in skilful hands, will enable us to arrive at very satisfactory results, although they do not furnish an absolute certainty.

(Fig. 74.)



In this examination, the woman should be placed on her side, if we wish to ascertain the extent of the antero-posterior diameter of the inferior strait ; the extremity of one branch of the instrument should be placed in front of the superior portion of the symphysis pubis, having taken the precaution of separating the soft parts ; the other extremity is held by an assistant on the spinous process of the first false vertebra of the sacrum.

If the pelvis be well formed, the distance between the extremities of the instrument will be seven inches.

We must then deduct half an inch for the thickness of the pubes,

and about two and a half inches for that of the sacrum, and we shall have four inches for the diameter at the superior strait. If the distance, however, between the extremities should be only six inches instead of seven, the antero-posterior diameter will be short by one inch, and, consequently, will measure but three inches, and so on successively.

If we wish to measure the oblique diameters, one point of the instrument must be placed on the external surface of the great trochanter, and the other on the prominent part of the sacro-iliac articulation of the opposite side. The distance should be nine inches, from which are to be deducted two and three quarter inches for the thickness of the trochanter, neck of the femur, and cotyloid cavity, and one and three quarters for the posterior symphysis. There will remain for the oblique diameter four and a half inches. If the distance be less than nine inches, the deduction made for the thickness of the parts will give the amount of deformity that may exist.

Two circumstances, however, may lead the accoucheur into error: 1st. The difficulty of fixing firmly the extremities of the instrument on the parts indicated; 2d. The variations in the thickness of the parts.

In a well-formed pelvis, it is easy to place one extremity on the pubes, and the other on the first tubercle of the sacrum, &c. But in a deformed pelvis, the parts no longer preserving their natural relations, it will be extremely difficult to determine the points on which to fix the instrument. I have often met with this difficulty alone, and also when assisting M. P. Dubois in his investigations at La Clinique; I have sometimes known M. Dubois to abandon the instrument, and substitute for it his finger. If the extremities of the instrument be not properly placed, there will be an inaccurate measurement. I will suppose now that the instrument is suitably adjusted. In a deformed pelvis, the thickness of the bones is not always the same; it varies extremely; in the antero-posterior diameter, for example, we obtain seven inches with the instrument, and yet there will not be four inches between the pubes and sacrum.

Nevertheless, Baudelocque's pelvimeter is a useful instrument, especially in young girls, in whom an internal examination is not permitted.

In order to ascertain the condition of the diameter of the inferior strait, the finger applied to the exterior will suffice.

The female sits on the edge of a chair, or stands up.

In the measurement of the antero-posterior diameter, the pulp of the index finger of the accoucheur should be placed on the point of the coccyx, and the summit of the thumb on the edge of the sub-pubic ligament, after which the two fingers, kept in this fixed position, should be applied to a graduated rule, in order to ascertain the precise distance.

In the transverse diameters, the index finger should be placed on one tuberosity of the ischium, and the thumb on the other.

The external measurement of the pelvis, as can readily be ima-

gined, does not afford results sufficiently positive to be relied on alone, when an internal measurement is admissible. In a married woman, for example, it is indispensable to measure accurately, by means of the touch, the various dimensions of the pelvis.

3. *Internal Examination.*

In the internal measurement of the pelvis, instruments have been proposed, the use of which is so inconvenient and painful that they have been abandoned: such is the intro-pelvimeter of Coutouly, and that of Madame Boivin.

Practitioners of the present day employ the finger; it is the best and most certain of all pelvimeters.

To ascertain the measurement of the antero-posterior diameter of the superior strait, the index finger should be introduced into the vagina in the direction of the axis of the inferior strait, towards the sacro-vertebral angle, the radial border of the finger being applied immediately under the pubes. If the pulp of the finger does not reach the sacro-vertebral angle, it is because the diameter has its normal dimensions; or, if it be contracted, it is so slight that delivery can still be accomplished.

But, if the finger reach the sacro-vertebral angle, we still have reason to apprehend greater or less difficulty. In order to measure, in this case, the extent of the sacro-pubic diameter, we must mark with the nail of the index finger of the other hand, being careful to separate the external and internal labia below the pubes, on the finger introduced; this finger is then withdrawn, and it is applied to a measure.

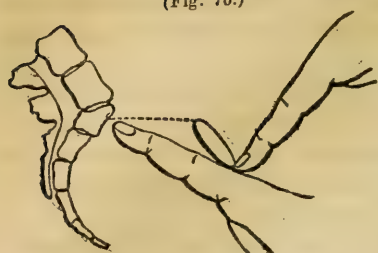
(Fig. 75.)



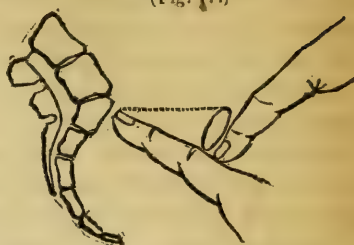
But the oblique line represented by the length of the finger introduced does not give exactly the length of the antero-posterior diameter, which, passing from the sacro-vertebral angle, proceeds to the upper portion of the symphysis pubis; this oblique line is somewhat longer. In order to obtain the precise measurement of the antero-posterior diameter, we must deduct half an inch (fig. 75).

We must also take into account the greater or less obliquity of the symphysis pubis. If, for example, its summit be thrown inward (fig. 76), we might suppose the diameter to be much greater than it really is. If it be thrown outward, it might be considered smaller (fig. 77).

(Fig. 76.)



(Fig. 77.)



The finger will ascertain readily whether the concavity of the sacrum is increased or diminished, and this will enable us to decide as to the condition of the antero-posterior diameter of the cavity.

The antero-posterior diameter of the inferior strait is measured in the same manner as the corresponding diameter of the superior strait. The extremity of the index finger being applied to the extremity of the coccyx, the accoucheur will raise his wrist until the radial border of the finger touches the lower portion of the symphysis pubis, and will mark this point with the other index finger. He will, moreover, ascertain more or less the mobility of the sacro-coccygeal articulation by pressing slightly on the point of the coccyx.

(Fig. 78.)



It is much more difficult to ascertain the oblique and transverse diameters of the superior strait ; but the diameters of the inferior strait may be determined by the fingers. It is by the touch alone that we can recognise the existence of exostoses or other tumours obstructing the pelvis.

Authors have recommended to make this examination by means of the entire hand introduced into the vagina ; but it is only during labour that this could be had recourse to.

As it is often of great importance to ascertain the extent of the oblique diameters, I shall add to the means already proposed the directions which M. Nægele has indicated for the exploration of the oblique pelvis.

To arrive at this result, we must compare the measurements of the two sides of an oblique pelvis ; the difference will give the extent of the contraction. I shall now, with this view, repeat certain measurements, made by M. Nægele, between points easy to determine in the most deformed pelvises.

When the pelvis is well formed, *from the ischiatic tuberosity of*

one side to the posterior superior iliac spine of the opposite side, the ordinary distance is six inches and a half. It is about the same on the one side as on the other.

In the oblique pelvis, there may be, between the two measurements made on each side, a difference of from one to two inches.

In a well-formed pelvis, from the anterior superior iliac spine of one side to the posterior superior iliac spine of the other side, the distance is about seven inches and three quarters.

In the oblique pelvis, there may be, between the two sides, a difference of from nine to twenty-two lines.

In a well-formed pelvis, from the superior apophysis of the last lumbar vertebra to the anterior superior iliac spine on both sides, the distance is six inches and a half.

In the oblique pelvis, the smallest difference between one side and the other is from eight lines to one inch five lines.

In a well-formed pelvis, from the great trochanter of one side to the posterior superior iliac spine of the other side, there are eight inches and a half.

In the oblique pelvis, the smallest difference is seven lines; the greatest, nineteen lines.

In a well-formed pelvis, from the middle of the inferior border of the symphysis pubis to the posterior superior iliac spine on both sides, there are six inches three lines.

In the oblique pelvis, the smallest difference between this same distance, taken from the two sides, is seven lines; the greatest, nine lines.

It is evident, therefore, that it will be easy to recognise a well-formed pelvis, because the measurements between the same points will be the same on each side; while in the oblique oval pelvis, there will be, for each measurement taken from one side to the other, a marked difference, which will enable us to recognise the oblique pelvis, and even the degree of contraction.

6. *Influence of Pelvic Deformities on Pregnancy; and Prognosis, so far as Delivery is concerned.*

I have already stated that an excess of capacity may exert a serious influence on pregnancy; such is not the fact with contracted pelves; they rarely compromise gestation; and yet, in certain cases of marked contraction, abortion would be desirable. This alone might avoid the perils of delivery at term, which would call for operations most dangerous to the mother.

This influence would be especially felt during labour; the difficulties would be proportioned to the deformity. As has already been remarked, in order precisely to appreciate these difficulties, it would be necessary to take into account the size of the child, its position, the reducibility of its parts, and the energy of the uterine contractions—circumstances not possible to know during pregnancy, and some of which only are appreciable at the time of labour.

Pelvic contractions expose the fœtus and mother to other dangers: the portion of the fœtus which presents does not close up

entirely the superior strait; the liquor amnii escapes, and the fœtus is exposed during the whole labour to the immediate compression of the uterus. Frequently, also, the first escape of liquid, after the rupture of the membranes, brings with it a portion of the umbilical cord, and the child dies from the consequences of this compression. The operations necessary for its extraction frequently, too, compromise its safety. I shall again speak of these circumstances in detail, when I treat of pelvic deformities during labour.

The mother's life may be endangered by the contusions, lacerations, and fistulæ of every kind, caused either by the head of the child, by instruments, by the separation of the symphyses, or by serious operations. I shall allude to these points hereafter.

7. *Indications presented by Pelvic Deformities during Pregnancy.*

Is it not possible, during pregnancy, for art to interfere profitably in order to prevent the serious consequences of pelvic deformities both for mother and child? This question is no longer doubtful. In order more definitely to point out the indications to be fulfilled by the accoucheur during pregnancy, I shall first enumerate the difficulties which may take place at the time of labour.

Moreover, as regards these difficulties, and the indications to be fulfilled, I shall arrange, according to M. P. Dubois, the various deformities of the pelvis in three principal classes.

The first class embraces pelves in which the passage measures three inches and a half.

The second, in which the pelves vary from three and a half to two and a half inches.

In the third are embraced all the cases in which the contraction is less than two inches and a half.

Three inches and a half.—Spontaneous delivery in this case, although more protracted, difficult, and dangerous, is, however, possible.

Meriman, Baudelocque, and M. Moreau have advised, under these circumstances, to subject the woman to a regimen calculated to diminish the volume of the fœtus, with a view to render delivery at term more easy. Repeated bleedings, light diet, frequent warm baths, and active exercise will attain this object. M. Moreau speaks of having succeeded in this several times, and I have heard him cite the case of a woman who was delivered at full term of a living child, after having been subjected to this kind of regimen, while in her previous pregnancies it became necessary to mutilate the child in order to extract it. I have myself noticed only one fact which will sustain this view,* but I have observed

* It is a fact well known to the profession, that pregnant women not only sustain themselves well under active antiphlogistic treatment, but that, notwithstanding severe inflammatory disease during gestation, and the consequent depletion to which they have been subjected, they bring forth at term healthy, vigorous children. How often are we called upon to attend ladies in their confinement emaciated by phthisis, and who bring into the world fœtuses as large as under ordinary circumstances? These facts, therefore, go directly to invalidate the views of Baudelocque, Meriman, and Moreau.—ED.

so many of a contrary nature that I do not concur in this opinion. M. P. Dubois does not believe that the regimen of the mother can influence the development of the fœtus, and this is the opinion most generally admitted.

The pelvis measuring at least two and a half inches, and also measuring from three and a half to three inches.—The spontaneous expulsion of the fœtus is here even possible. However, the uterine contractions must be very expulsive, and the reduction of the head considerable, for the smallest diameter of the head is three and a quarter inches; and yet the life of the child will be often compromised. But in a contraction less than three inches art will have to interfere, unless the fœtus be dead, and softened by putrefaction.

The dietetic means recommended by M. Moreau might be employed here, but we possess, in these cases, a much more precious resource, *premature artificial delivery*.

1. *Premature Artificial Delivery.*

Thanks to the efforts of MM. Stoltz, Dezeimeris, P. Dubois, and Velpeau, delivery brought on before the full term is an operation hereafter recognised in French midwifery. For a long time it proved useful to our neighbours in England and Germany, while a foolish prejudice caused it to be rejected by French practitioners, who did not hesitate even to have recourse to the Cæsarean section, and symphyseotomy.

And what object is proposed in this operation? To save the child, and protect the mother from the perils of an operation at the full period of utero-gestation. And this object, be it remembered, is attained in the majority of cases.

If we consult the statistics published in 1838 by M. Stoltz, it will be seen that, in 211 premature artificial deliveries, more than one half of the children survived, and scarcely one woman in fifteen died; now compare these results with those obtained from the Cæsarean section and symphyseotomy, and then decide.

We have not within the walls of Paris one solitary example of a woman who has survived the Cæsarean section. She who lived the longest was one of those on whom I assisted M. P. Dubois to operate. She died on the 17th day of a tetanic affection, when everything promised a most successful result.—(*Bull. of the Acad. of Méd.*, t. iii., p. 694; t. v., p. 25.)

To obtain the result proposed in premature artificial delivery, it should not be attempted until a period of pregnancy at which the viability of the fœtus is certain, and only when delivery at the full term cannot be accomplished without a cutting operation for the fœtus or mother.

The viability of the fœtus is not constant until after the revolution of the seventh month; and it is at this period that artificial delivery should be attempted. But as the fœtus may not be viable at the seventh month, and the longer it sojourns in the uterus the more apt it will be to live, with a view of affording it the

best chance of viability, we should not practise this operation until the latest possible period, depending upon the degree of contraction.

So far as the safety of the mother is concerned, the question is less easy to determine; the limits within which this operation may be performed must be established with precision.

It should not be attempted while the degree of contraction affords hope that delivery may take place at term, even if this delivery should require assistance. In a word, while there is a chance to extract the fœtus alive, recourse should not be had to it. When the contraction is such that a living fœtus cannot be brought forth, premature delivery should not be attempted; and the accoucheur has then to choose between the Cæsarean section or miscarriage.

At the period of viability (seven months), in comparing the dimensions of the bi-parietal diameter of the head with the dimensions of the pelvis, we may ascertain the degree of contraction in which it would be proper to practise artificial delivery. At seven months and one week, the bi-parietal diameter measures from two and a quarter inches to two inches and nine lines.

It is necessary, therefore, that the diameter of the pelvis should be at least two inches and nine lines; a farther contraction than this does not allow premature artificial delivery.

Now the less the contraction, the longer should we delay, in order to afford a greater chance to the fœtus. But when the diameter of the pelvis is above three inches and two lines, which is the other extreme limit, this operation should not be performed, for spontaneous delivery is possible at term, the bi-parietal diameter at this period not measuring more than from three inches two lines to three inches four lines. However, if the woman had been in the habit of bringing forth very large children, artificial delivery would be justifiable when the superior strait measures three inches and a half.

Certain practitioners have recommended not to perform this operation in primiparæ, and to wait until the difficulties of a first labour shall have pointed out its necessity in subsequent pregnancies.

M. P. Dubois does not concur in this opinion; for he contends that, when the pelvis measures only from two inches nine lines to three inches and a quarter, spontaneous delivery is merely an exception, while difficult, and often fatal labours, result.

He, moreover, recommends this operation when the pelvis is obstructed by the presence of a tumour, and when the female is affected with acute disease.

He does not sanction the operation when there are twins, for, in such cases, the children are smaller, and may pass the straits at term; and, moreover, they are rarely viable before this period.

In all instances, the accoucheur should be assured of the life of the fœtus before resorting to the operation.

2. *Mode of Operating.*

The consequences of an artificial delivery may be quite different from what is anticipated. And in order not to assume unnecessary responsibility, the accoucheur, before performing the operation, should take the counsel of several colleagues. The operation being decided upon, the woman should be put in a state of preparation several days in advance, by baths, and emollient vaginal injections. Finally, before the operation, the bladder and rectum should be evacuated.

The woman is placed transversely on the edge of the bed, the breech on a firm cushion, and the legs supported by two assistants.

After having again ascertained the condition of the pelvis, and not the presentation and position, which would be entirely useless, and in most cases very uncertain,* the operator introduces a speculum. As soon as the neck of the uterus corresponds to the centre of this instrument, he then introduces into the vaginal orifice of this organ, which, at this period of pregnancy, is always open, a small cone of prepared sponge. This cone should be about eighteen lines in length, and six lines at its base. It should be well lubricated, and retained externally by a string, and then carried to the orifice by means of the tampon forceps. The operator then introduces a soft sponge, moistened with warm water, as far as the neck of the womb, and withdraws the speculum gradually, being careful to retain the sponges in place with the extremity of the forceps. The second sponge should be large enough to fill the whole vagina.

This being done, the whole is maintained in situ by means of long compresses, and a T bandage.

Such is the mode of procedure adopted by M. P. Dubois, but he likewise administers ergot, in the dose of fifty to sixty centigrammes, three times. I have almost always remarked that uterine contraction comes on one or two hours after these means have been employed; the neck of the uterus, irritated by the prepared sponge, dilates; and it acts sympathetically on the muscular fibres of the fundus of the organ, and solicits its contraction. The ergot increases the activity of this contraction.

When, by the lapse of time, and the intensity of the pains, it is judged that the dilatation is sufficient to permit the easy rupture of the membranes, escape must be given to the liquor amnii by perforating the membranes with an ordinary writing pen; and then real labour declares itself.

Sometimes, however, several hours may pass by before any appearance of labour exhibits itself; sometimes, also, it becomes necessary to introduce a larger cone of sponge, and repeat the ergot.

The ergot, however, must be administered with caution, for fear it should occasion permanent contractions, fatal to the fœtus; it

* The delivery would be most favourable in the presentation of the summit, but any other presentation would not be a contra-indication.

would, indeed, be advisable not to give it at the commencement, but reserve it, in case the prepared sponge did not prove sufficient.

Some authors have recommended to bring on premature delivery by external manipulations, the rupture of the membranes only, &c., &c. But the best and least hazardous plan is the one I have just noticed. The rupture of the membranes is often very difficult at this period before the dilatation of the neck, and the manipulations are frequently useless.

When the contraction of the pelvis is less than two and a half inches, spontaneous delivery at term is physically impossible; the accoucheur, in this case, has not the resource of premature delivery, for a living child cannot be extracted. When the full period of utero-gestation is completed, there will be but one of two alternatives: diminish the volume of the child, or enlarge the passage, or open for it a new place of escape.

During pregnancy, abortion will present an extreme and last resource. And it would seem more humane to sacrifice, before the period of viability, an embryo whose existence is so uncertain, in order to protect the mother from the perilous chances of symphysiotomy and the Cæsarean section.

I must confess that, if such an alternative were presented to me, the diameter of the pelvis being only two inches, I should not hesitate to propose this means.

The abuse and criminal extension of such a resource is reprehensible, but not its proper and authorized employment. This operation should always be undertaken with great care, and all necessary precaution used to satisfy the public mind of its necessity: it should never be performed without previously having a consultation of three medical men, and the opinion should have their written signatures.*

* *Premature artificial delivery* I cannot but regard as one of the most precious aids of which, under certain trying circumstances, the accoucheur can possibly avail himself. Why enlightened France, a country which has done so much for the sound advancement of obstetric science, has for so long a period rejected this operation, I cannot understand. And I participate entirely in the feelings of pleasure expressed by our author, that the attention of his countrymen should at last have become awakened to the importance of this subject. In Germany and Holland, premature artificial delivery has been had recourse to of late years with the most satisfactory and marked results. According to Kilian (*Die Operat. Geburts-hülfe*, p. 298), this operation, up to the year 1831, had been performed 161 times, viz.,

In England	.	.	.	72
In Germany	.	.	.	79
In Italy	.	.	.	7
In Holland	.	.	.	3
				161

Of these 161 cases, 46 fœtuses were born dead and 115 living, 73 of which continued to live. Eight only of the mothers died after delivery, and five of these succumbed from causes entirely unconnected with the operation.

Now, supposing that these cases absolutely called for this operation, here are results between which and the results of the Cæsarean section, symphyseotomy, or craniotomy, either as regards the ultimate safety of the mother or child, no comparison can be instituted; the chances of safety both to mother and child being in favour of artificial delivery at least as five to one.

While I heartily concur in the views entertained by Drs. Dubois and Chailly as to the value and importance of this operation, *when absolutely indicated*, yet there are some points of practice suggested by them from which I cannot but dissent, and I do so with great deference.

1st. I do not think the introduction of the speculum at all necessary; the operation can be performed not only with facility, but entire safety, without this instrument. Again, I hold

ART. VIII.—DEFORMITIES OF THE SOFT PARTS DURING PREGNANCY.

Deformities of the organs of generation, either accidental or congenital, which have not been of a nature to prevent conception,

it to be a rule, which the pupil should ever keep in memory, that the feelings of his patient are always to be sacredly guarded, and on no account should there be an unnecessary exposure of her person.

2d. The promiscuous administration of ergot, as an auxiliary in this operation, must occasionally be attended with serious consequences to both mother and child. For, in the first place, the justification of premature artificial delivery is founded on the fact that there is such a contraction in the bony or soft structures of the mother as seriously to endanger her life, as also that of her child, if she be permitted to pass on to her full term. Now, if one of the extremities of the fœtus should not present at the superior strait (and this cannot be positively ascertained before the dilatation of the uterine orifice), to administer ergot would be to ensure the death of the fœtus, and not unlikely serious lacerations might ensue to the mother. For example, if the child should present crosswise, or in any other manner so as to cause a disproportion between it and the parts through which it has to pass, ergot would certainly be contra-indicated.

3d. Instead of introducing a piece of prepared sponge into the orifice of the uterus, and afterward plugging up the vagina, I greatly prefer to use a simple gum-elastic bougie. Let the index finger of one hand be introduced as far as the neck of the womb; having reached this organ, the end of the finger should rest on the posterior lip; the bougie, being well lubricated with oil, is then to be carried along the finger, and when it reaches the os tincæ, the finger previously introduced should give the instrument a direction, *NOT from before backward, but from below upward*, in the line of the axis of the superior strait; the instrument, thus directed, should be made merely to enter the orifice, and not be introduced higher, and by the finger already in the vagina the end of the instrument should be pushed gently backward and forward; and with this careful titillation, the uterus will often be thrown into contraction. Should this, however, not prove sufficient to cause the action of the womb, after the lapse of twelve hours the instrument should be again introduced, and carried sufficiently high to rupture the membranes. This being done, the contractions usually proceed, and delivery is effected. Should, however, the womb become inert, I should much prefer awakening its energies by the gentle and cautious introduction of the finger into the uterine orifice than by the use of ergot, at least *until the absolute position of the fœtus had been ascertained*.

I have been obliged to have recourse to premature artificial delivery twice in the same lady, and with entire success. In both instances I pursued the course just recommended.

This lady was a native of Canada. Her husband, some months after marriage, took her to South America, where she was delivered of a child. He stated to me that she had been suffered to remain in labour for five days; and after experiencing the most agonizing pains, she was spontaneously delivered of a putrid fœtus, of immense size. In about a month after her delivery she began to walk about her room, and although weak, she was otherwise in tolerable health. The first intimation she had that there was anything wrong was the excessive pain in any attempt at sexual intercourse; this proved to be impossible. In the course of a few weeks they sailed for New-York, and as soon as they arrived, my late lamented friend, Dr. Bushe, was sent for, and was requested to take charge of the case. At this time his health was so infirm as to disqualify him from attending to general practice. He sent a note to me by her husband, requesting that I would take this lady under my professional charge. On visiting her, and making an examination, I found that the entire vulva was in a state of adhesion, allowing only a small opening for the meatus urinarius. After hearing the account of her labour, this condition of things was easily explained. From the long and severe pressure of the head of the fœtus against the walls of the vagina, violent inflammation ensued, resulting in sloughing, and a consequent adhesion of the vaginal parietes. The indication in this case was obvious—the vagina needed restoration. Accordingly, I commenced an incision just below the meatus urinarius, and extended it about an inch downward; the scalpel soon came in contact with cicatrices so resisting that it appeared almost as if I was cutting on iron. As soon as I completed the incision, I introduced a small sponge covered with oil silk, and retained it in situ with the T bandage. By occasionally withdrawing the sponge and renewing it, I found that the vagina yielded slowly to this sort of pressure. With the aid of a small-sized rectum bougie, carefully introduced twice a week, and, after being withdrawn, replaced by the sponge, the vagina, in the course of a month, permitted the introduction of the finger; then I had an opportunity of ascertaining its condition. It was filled with hard and unyielding cicatrices, in the form of rings. Having succeeded in dilating the vagina to this extent, I then recommended this lady to continue the sponge, and occasionally to introduce the bougie. In the course of three months, I was visited by her husband, who seemed somewhat chagrined, and he stated that it pained him to say that his wife thought she was again pregnant. This I found really to be the case, though it is manifest, from what has been said, that sexual intercourse must have been attended with great difficulty. With this, however, I had nothing to do; the mischief had been done, and it was my duty to provide in the best possible manner for my patient's safety. The sponge and bougie (gradually increasing the size of both) were constantly used, and the va-

may, however, occasion fears at the time of delivery, and require some attention during pregnancy: the union of the labia majora and minora, permanence of the hymen, &c.

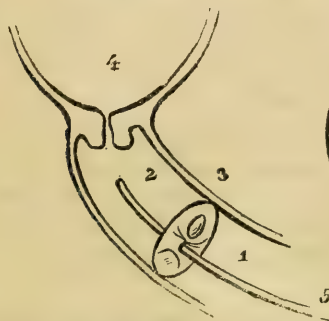
As is readily imagined, this adhesion cannot take place except in a certain extent of the vulva, for if it were complete, impregnation could not be accomplished. Most frequently it is not until the time of labour that the accoucheur is called upon to separate these parts. It would be better, even, to wait until this period, when the accident has been suspected during pregnancy, for nature, in most cases, will be sufficient to destroy this adhesion at the time of expulsion.

The same is true as regards the presence of the hymen.

Narrowness and Rigidity of the Vagina.—The vagina may be divided transversely by bridles, and cross-pieces pierced with holes; or longitudinally by a partition, extending from the vulva to the uterus, and penetrating sometimes the interior of the cavity of this organ. Nature will suffice in the majority even of these cases. I witnessed at La Clinique a remarkable fact of this kind. A young girl, sixteen years of age, presented herself a little before her full term; the sage-femme, in examining her, found her finger arrested in the middle of the vagina by a resisting membrane, in which no opening could be detected.

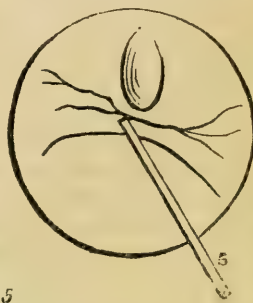
M. P. Dubois examined her with the speculum, and requested me

(Fig. 79.)
Lateral view.



1. Anterior chamber.
2. Posterior chamber.
3. Diaphragm.

(Fig. 80.)
Before delivery, seen with the speculum.



4. Uterus.
5. Sound penetrating the diaphragm.

gina seemed to yield slightly to this continued pressure; this lady having passed six months and a half of her gestation, I deemed it prudent to hold a consultation as to the propriety of resorting to *premature delivery*, feeling in my own mind that (although contractions of the soft parts do sometimes yield to the combined influence of pregnancy and labour) in her situation it would, to say the least, be hazardous to the child to allow her to proceed to her full term. On proposing the consultation to her husband, he was anxious that a particular friend of his, Dr. Richardson, of Havana, then on a visit to this city, should be called in. This was accordingly done; and after a full examination of all the circumstances, it was deemed prudent to bring on *artificial delivery*. This I did in the manner above indicated, and delivered the lady of a fine, healthy girl. This lady again became pregnant, and went to the city of Baltimore, where she was delivered at full term, with the forceps, of a dead child after a labour of six days!! In consequence of the contraction of the soft parts, the vagina was lacerated; vesico-vaginal fistulæ followed, and again the vagina became considerably contracted. About three years from her last delivery, I was again consulted in her case. She was pregnant, and I resorted to premature artificial delivery, the soft parts not being in a condition to justify delay until the completion of gestation. In this instance, too, the child was born alive, and lived for three months.—En

to make a drawing of this anomaly ; I did so, and it is here given to the reader. In the centre of the partition there was a small orifice, through which an ordinary sound could scarcely be passed. The sound penetrated a posterior free chamber.

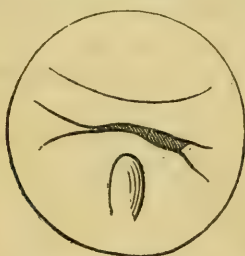
Notwithstanding the difficulties which an anomaly like this might have justly caused to be apprehended at the time of delivery, yet M. P. Dubois, confiding in the infinite resources of nature, and, moreover, thinking it would always be in time to interfere during labour, did not perform any operation.

The event justified his hopes ; for one morning a messenger informed him that the woman had been delivered alone, almost without pain.

Fifteen days after delivery, the finger readily penetrated the opening, and reached the posterior chamber ; but it was pressed on all sides by the diaphragm or partition. At the time of delivery, the diaphragm was not lacerated ; its opening was merely distended, to allow the passage of the fœtus ; but it again contracted or returned upon itself like the neck of the womb after delivery.

(Fig. 81.)

After delivery, seen with the speculum.



However, in the case of extreme contraction of the entire vagina, would it not be prudent to favour the dilatation of this canal by the introduction of prepared sponge, or some other dilating body, as was done in a similar instance by my friend M. Maher, Surgeon of Marines at Rochefort ; or should we trust entirely to nature ?

M. Moreau also cites a case in which the vagina would scarcely admit the introduction of a writing-quill. This disposition, which gave rise to much uneasiness, yielded to the progress of pregnancy, and to the modifications induced in the soft parts by labour.

ART. IX.—DISPLACEMENTS OF THE UTERUS DURING GESTATION.

The displacements of the uterus during gestation may occur at various periods, and in various ways.

During the first months, while the uterus is yet in the pelvic cavity, it may descend, incline forward or backward ; these deviations are called *descent*, *ante-version*, and *retro-version*.

At a later period, when the uterus has ascended above the superior strait, it may likewise descend, incline forward, to the right and to the left, but not backward. These displacements have re-

ceived more particularly the names of *anterior* and *lateral obliquities*.

§ 1. *Descent.*

As was observed, when treating of the *diagnosis of pregnancy*, that the uterus descends at certain periods of gestation, and this descent should be considered physiological; but if the pelvis be very capacious, the ligaments extensible, and the tissue of the organ present less resistance than in the ordinary state, the entire uterus may descend, and the cervix repose on the floor of the pelvis; sometimes, even, it projects through the vulva. In this case, the resources of art will be called for, with a view to sustain the uterus, otherwise very serious evils may result from this disposition, such as acute pain in the groins, constipation, retention of urine, &c.

The best means to employ in this case is a fine sponge introduced into the vagina in order to support the organ; the pessary should be proscribed. I have not omitted any of the indications which these displacements present, in the article *Deformed Pelvis by Excess of Amplitude*.

§ 2. *Retro-version and Ante-version.*

These accidents, less frequent than the former, are also much more grave, if they are not remedied in time. (See the same article, *Deformities by Excess of Amplitude*.)*

* The inconveniences arising from displacements of the uterus in the unimpregnated state, although occasionally serious, are not to be compared with the grave results growing out of this condition of things during gestation, especially if the actual cause of the difficulty should escape the attention of the accoucheur. In order that labour may be spontaneous or natural, among other conditions necessary, it is essential that the long axis of the uterus should be parallel, or nearly so, to the axis of the superior strait of the pelvis. Any departure, therefore, from this parallelism, which would so displace the womb as to occasion an absolute retro-version of its orifice, or an excessive right or left obliquity, would necessarily not only retard, but frequently render delivery physically impossible, until the mal-position had been overcome. The following case will elucidate this principle:

On Friday, the 17th of July, 1835, I was requested by Dr. Elwes, of the United States Army, to visit Mrs. B. at Fort Hamilton, Long Island, distant twelve miles from the city. I was informed by Drs. Carpenter and Elwes, the former of whom saw her at the commencement of her sickness, that she had been in labour, not, however, accompanied by very strong pain, for eight days, and that the liquor amnii had been passing from her, in small quantities, for the four days previous to my visiting her. Dr. Carpenter, who was the family physician, and who had attended her in two former accouchements, stated that he had been unable to reach the mouth of the womb, and that, from the commencement of her labour up to the period at which I arrived, he had been completely foiled in every attempt to effect this object. Dr. Elwes had experienced the same difficulty. At the request of these gentlemen, I proceeded to make an examination. On introducing my finger into the vagina, I discovered a large resisting tumour, which I recognised to be the head of the fetus, the womb intervening between it and the finger. In examining very cautiously the surface of the tumour, I was unable to discover the os tincæ. It occurred to me that this was a case of retro-version of the neck of the womb, and in gently sliding my finger under the fetal head, and carrying it towards the posterior part of the pelvis, I felt the os tincæ, which was turned so entirely backward as to regard the concavity of the sacrum. It was now quite apparent why the labour had been so protracted, and it was certain that while the uterus retained its present position, delivery would be out of the question. In consequence of the mal-position of the womb, the whole force of the uterine contraction was directed in such way as to render it physically impossible (without laceration of this viscus) for the child to pass through the pelvis. The position of the uterus, under ordinary circumstances, is parallel, or nearly so, to the axis of the superior strait, so that the whole force of the contractile effort being directed from above downward, it is evident, should there be no impediment to a natural delivery, that the child must be propelled through the maternal pelvis. In this case, however, in consequence of the mal-position of the womb, the force of the contractions was cen-

§ 3. *Obliquities of the Uterus.*

In speaking of the diagnosis of pregnancy, I remarked that the uterus was more or less inclined in front, and to the right, rarely to the left; such is the normal condition of pregnancy. But when this disposition is considerable, it becomes, during the latter months, the cause of inconveniences and pain, which it is important to remedy.

The abdomen should be supported at an early period with an appropriate bandage. If this precaution should be neglected, when there is a disposition to separation in the linea alba, the uterus may escape out of the abdominal cavity, and occasion a protrusion under the integuments of the abdomen.

§ 4. *Hernia of the Uterus.*

Facts well authenticated of hernia of the uterus during a state of vacuity and the first month of pregnancy, fully establish the possibility of this occurrence; but we cannot admit the passage of the

tred against the posterior wall of the cervix uteri, and the point of resistance was found to be the internal surface of the sacrum. This, then, accounts at once for the difficulty of the labour, and shows most conclusively that it could not have been otherwise than protracted. As soon as I had discovered the position of the uterus, and thus assured myself of the entire cause of the delay, I withdrew my hand, and suggested to Drs. Carpenter and Elwes, in which suggestion they both coincided, that this case presented two indications, viz.:

1st. To rectify, as far as practicable, the mal-position of the cervix uteri.

2d. To turn, and deliver by the feet.

I should have remarked that the mouth of the womb was quite soft and dilatable. It will, I apprehend, be unnecessary for me to enter into any argument to show the paramount necessity of the first indication; and if it be recollected that the patient was in a state of dangerous exhaustion, the propriety of the second will be evident. But why, it may be asked, not apply the forceps? My answer to this question shall be brief. The head of the fœtus was still at the superior strait, and, without reference to the opinions of others on this subject, I can aver, for myself, that, where immediate delivery is indicated, I should always prefer (provided the parts were in a proper condition) turning by the feet, to the delay which must necessarily attend delivery by the forceps before the head has begun to descend into the excavation of the pelvis. The operation being agreed upon, Mrs. B. was placed on her back, with her breech on the edge of the bed, her legs flexed on her thighs, and her feet resting on the hands of Drs. C. and E., who were seated one on each side of me. I introduced my right hand, and, with the other applied to the abdomen, I reached the os tincæ; I then succeeded in fixing my index finger within the circle of the anterior lip, which was cautiously brought towards the centre of the pelvic excavation, at the same time gently pushing back the fundus with the hand applied to the abdomen. In this way I succeeded in overcoming the mal-position of the uterus; and in fulfilling the second indication I proceeded as follows: Before determining on which hand to employ in order to effect the version, I first acquainted myself with the precise situation of the fœtal head, which I found to be placed in the second position of the vertex, the posterior fontanelle corresponding to the right acetabulum, and the anterior to the left sacro-iliac symphysis; consequently, I introduced the right hand for the purpose of performing the version, in order that the natural curve might be given to the child's body. The hand was carried up in the usual manner until the feet were reached; these were gently grasped and brought into the vagina. The patient, at this time, became alarmingly exhausted; she rallied under the influence of a little brandy and water, and I proceeded to complete the delivery without delay. The child was alive and vigorous, and both parent and offspring recovered from their perilous position, and are, I believe, at this time in the enjoyment of good health.

The above case is interesting on two accounts. In the first place, that the child should not have been sacrificed by the great length of time Mrs. B. was in labour; and, secondly, the possibility of mistaking the retro-version for an imperforate condition of the os tincæ. Cases are recorded in which the orifice of the womb was completely obliterated in women in labour. Lauerjat's case, in this particular, is interesting: it is cited by Sabatier in his *Médecine Opératoire*. Lauerjat, not being able to detect the mouth of the womb, during labour, in a woman pregnant for the first time, made an incision into the portion of the uterus corresponding with the orifice. M. Gautier, a Parisian surgeon, had a similar case. Instances of the same kind are likewise quoted by Hammond and others. And in another part of this work I will give the particulars of a case in which, in consequence of injuries inflicted on the os tincæ by the introduction of instruments to promote miscarriage, it became necessary for me, at the time of labour, to incise the orifice, which resulted favourably to both mother and child.—Ed.

uterus through the inguinal ring in an advanced period of gestation.

This pretended hernia of the uterus, which can be reduced by sustaining this viscus during labour, is nothing more than eventeration or protrusion of the womb, more or less developed, through the separation of the linea alba.

The only indication to fulfil, during pregnancy, is to return the organ, and maintain it by means of a bandage.

It will be seen that I have placed in the same chapter the anterior and lateral obliquities. During gestation, they require one and the same treatment. As to posterior obliquities, they cannot be admitted. The abnormal insertion of the neck of the uterus on the anterior parts of the organ has led to the belief of a posterior obliquity. (See the same article during labour.)

ART. X.—TUMEFACTION AND PAIN IN THE BREASTS.

During the first period of pregnancy, the reaction towards the breasts may be such as frequently to produce a feeling of painful tension. In order to moderate this, it will be sufficient to apply emollient cataplasms to the breasts, and to keep the bowels free by injections or mild laxatives. This condition, however, is merely temporary; it disappears as pregnancy advances. I am at this time attending a lady who has presented all these phenomena. Sometimes this pain in the breasts does not appear until a late period of gestation.

ART. XI.—TENSION OF THE ABDOMINAL WALLS, AND ESPECIALLY OF THE INTEGUMENTS.

In proportion as the uterus becomes developed, the abdominal walls, and especially the integuments, are forced to distend in order to afford room to the encroaching organ; often even they yield under these efforts, and become corrugated. The integuments of the thighs are also called upon to contribute to the development of the abdomen.

When these walls offer very great resistance, they become much distended; the woman experiences pain, and the uterus, impeded in its evolution, sometimes contracts prematurely, and expels the fœtus.

This resistance is best overcome by embrocations with the oil of sweet almonds, and general baths; and the consequences of this reaction of the abdominal walls on the uterus must be controlled by anodyne injections, small bleedings, &c.

ART. XII.—PRURITUS.

In order to omit none of the inconveniences to which the pregnant woman is exposed, I shall speak of that excessive pruritus or itching about the external genitals during the first months of pregnancy. I have seen it so insupportable that women affected with it could neither sleep, walk, nor eat; they were in a state of continual excitement, and could not resist scratching themselves.

General baths, emollient lotions, frequent lotions with the vegeto-mineral water, will usually relieve this condition. However, the pruritus is sometimes very obstinate; in a poor woman whom I was several times called upon to attend, after the employment of general bloodletting, and all the other remedies, it yielded only to the application of leeches to the vulva.*

This latter means I have heard M. Desormeaux recommend, and, in this case, I had no scruples in using it, so important was it, at any price, to relieve the patient.

The pruritus was so excessive, that I apprehended every moment the occurrence of convulsions.

The pregnancy, however, went on to the full time; she was delivered of a dead child, which a circumstance unconnected with the leeching had deprived of life—the interruption of the circulation in the cord by a clot of blood formed around the umbilical vein. The suffering of this patient during pregnancy had been so intense that she was attacked with metro-peritonitis after delivery, from which she had the good fortune to recover.

ART. XIII.—MISCARRIAGE AND HEMORRHAGE DURING GESTATION.

Hemorrhage during pregnancy is a phenomenon which almost always precedes, accompanies, or follows miscarriage. These two accidents have, in their causes, progress, diagnosis, and especially in their treatment, such intimate relations, that it is almost impossible to separate them without exposing ourselves to numerous repetitions; so that I have preferred treating of them in the same article, and at the same time considering hemorrhage during pregnancy only as one of the symptoms of miscarriage.†

* A more annoying affection than pruritus of the vulva in pregnant women can scarcely be imagined; and if, in certain aggravated forms, it is not relieved, it will be very apt to lead to abortion. The application of leeches I have, on several occasions, had recourse to, and with the happiest effects. A solution composed of $\mathfrak{z}\text{i}$. of borat. sodæ to $\mathfrak{z}\text{xij}$ aquæ bullient. applied to the parts cold and frequently, I have found of great value in this affection.—Ed.

† Our author has certainly omitted to state one important exception, which clearly establishes the possibility of hemorrhage during gestation as entirely unconnected with miscarriage. Now, under certain circumstances, it may happen that between the seventh and eighth month, a pregnant female may be attacked with slight flooding, without any predisposition on her part to miscarry, and if the cause of the hemorrhage be not promptly understood, serious, and, indeed, often fatal consequences may ensue. Supposing, therefore, that a female has passed to her seventh month of pregnancy without encountering any trouble, or without being subjected to any cause ordinarily capable of inducing miscarriage, and she should at this period flood, the accoucheur will at once have ground to suspect that the hemorrhage is in consequence of an insertion of the placenta on the mouth of the womb. Now what connexion is there between hemorrhage at this period of gestation, and the presence of the placenta over the uterine orifice? The connexion is manifest. For example, at this period the internal orifice begins to open, and, consequently, some of the bloodvessels by which the maternal portion of the placenta is united to the internal surface of the womb become lacerated, and occasion a discharge of blood. Should the presence of the placenta be the true cause of the hemorrhage in this case, and be overlooked by the accoucheur, and he treat the matter lightly, the gravest consequences may result both to mother and child. The most perfect repose should be enjoined; the patient should be kept in the recumbent posture on a mattress in preference to a feather bed, with her hips slightly elevated above the plane of the body. She should be free from all excitement, both physical and mental; iced drinks should be administered, and the bowels kept gently relaxed. The following will be found well adapted to this case:

R. Sulphat. of Magnesiæ, $\mathfrak{z}\text{i}$.

Infus. Rosar., $\mathfrak{z}\text{viiij}$.

A tablespoonful to be given twice or thrice a day, depending on its action.

In addition to these means, cloths saturated with ice-water should be placed on the lower

Abortion may be said to be the expulsion of the fœtus before the period of its legal viability, which has been fixed at six months. It has been generally divided into ovular miscarriage, when it takes place before the end of the first month; embryonic miscarriage, before the end of the third month; and fœtal miscarriage, from the third to the sixth month.

This accident, which people in general, and certain physicians, consider as of little moment, requires, however, under ordinary circumstances, as much care, if, indeed, not more, than a delivery at term, on account of the serious consequences it may have on the economy. Either because the small size of the fœtus seems to favour its expulsion, or the slight development of the circulatory apparatus occasions but little hemorrhage from the female, miscarriage is much more frequent during the first two months than at a more advanced period of pregnancy. If a contrary opinion has been entertained, it is because great attention is necessary to ascertain this accident in the first two months, the embryo being, in most instances, in the cloths with which the female has protected herself, or in the garde-robe. Miscarriage sometimes takes place without the woman's being conscious of it, and the hemorrhage which accompanies it is mistaken for profuse menstruation; at other times, if the indisposition she experiences be slight, even when miscarriage occurs, she takes but little care of herself, and the miscarriage passes unperceived; it is, in general, only in cases in which the symptoms accompanying miscarriage are grave enough to require urgent attention that the physician is called in, and that he can take cognizance of the fact; and he frequently is in doubt as to whether the accident has taken place or not. We can, therefore, readily see the difficulty of furnishing an exact statistical table of city practice; and in hospitals much error must ensue, for women scarcely ever apply for admission in cases of early miscarriage.

It is generally supposed that male miscarriages are more frequent than female; but this opinion, I believe, is owing to the fact that, during the first months, the clitoris, in consequence of its development, may be mistaken for the penis. However, the returns, giving sixteen male births to eleven female, serve to confirm this opinion.

§ 1. *Causes of Miscarriage.*

The death of the embryo precedes or follows the expulsion; these two facts are intimately connected. Thus, when some cause

portion of the abdomen and thighs. Should the patient be plethoric, a bleeding from the arm from ξx to ξxij , and repeated according to the judgment of the accoucheur, will be indicated. Should the hemorrhage continue, notwithstanding all these remedies, the tampon should then be had recourse to. The object of the tampon in this case is to make gentle but firm pressure on the mouth of the uterus, and this will often succeed in arresting the hemorrhage. The tampon may consist of pieces of soft sponge, or of old linen, with which the vagina must be completely filled, care being taken to make exact pressure on the uterine orifice; and it should be retained in place by the T bandage. I have, on several occasions, been enabled to arrest the bleeding in this way, and with proper care, the patient can be conducted to the full term.—ED.

or other has determined the death of the fœtus, according to the established laws of nature, it should be expelled; also, if the influence of the same agents or any other cause should throw the womb into contraction, the fœtus is expelled, and it ceases to live because it has not attained its development.

We are, therefore, naturally led to admit as causes of miscarriage all those influences which may induce uterine contractions before the term of viability, or occasion the death of the fœtus.

A. Predisposing Causes.—Certain opposite temperaments, but which have strong relations by their effects, predispose women to hemorrhage, and, consequently, to miscarriage. Such are the plethoric and nervous temperaments. The consequence of the former is an abundant menstrual evacuation and a hemorrhagic tendency, which is renewed at each period; the latter determines towards the uterus a local congestion, and either of these two circumstances may prove fatal to the fœtus by destroying the vascular connexions which unite it to its mother.

All the predisposing causes of hemorrhage, that is to say, all those which are of a nature to determine an afflux of blood to the uterus, will be likewise causes of miscarriage: such as inflammation of the uterus or the adjoining organs; their organic alterations, hemorrhage occurring in preceding pregnancies, and which have a tendency to be renewed at each subsequent gestation.

A sedentary, idle, inactive life, luxurious habits, and, finally, laborious occupations, are so many predisposing causes to hemorrhage and miscarriage.

B. Causes which tend to produce Uterine Contractions before the full Period.—All mechanical irritations, such as falls, efforts, coughs, vomiting, and contusions, may bring on contractions of the uterus. It is the same with repeated vaginal examinations, the presence of a pessary, coitus, cauterizing the neck of the womb, and criminal attempts. Uterine rheumatism is a very frequent cause of miscarriage.* The too great rigidity of the uterine fibres, and the resistance they offer to dilatation, and the deficiency of tone in the inferior segment of the uterus, have also been regarded as causes of miscarriage. Miscarriages are more frequent in primiparæ, in whom the uterine fibre, less easy to distend, is always ready to react. This resistance of the uterine fibre may explain how miscarriage has a tendency to be repeated in the same woman, not always at the same period, but at a term somewhat more advanced at each successive occurrence, so that, after several miscarriages, the woman finally reaches her full period. In this case, the resistance of the organ is gradually weakened by the preceding pregnancies, and the second is a little more prolonged than the first, the third more than the second, &c., &c.

Frequently, too, the uterus tends to contract at the same period;

* I am at this moment attending a lady who had always miscarried, several times from this cause, before I was called to her. I have succeeded in carrying her to her seventh month, and have hopes that she may attain her full period.

but then it is on account of habit, or of the disposition which organs have of reproducing the same acts at the same period.

The presence of two fœtuses, dropsy of the amnios, in consequence of the excessive distension of the uterus, frequently induce premature contractions.

Adhesions, displacements of the uterine annexæ, such as the fallopian tubes, ovaries, broad ligaments; the presence of a fibrous tumour in or near the uterus, the pressure of corsets, and, in a word, all the circumstances which oppose a free increase of the organ, may determine early action.

Some authors have cited as a cause the influence which pelvic deformities exert on pregnancy; but this is far from being proved; as to the influence of the insertion of the placenta, that, too, remains to be demonstrated.

Sympathies depending on irritation of the bladder and rectum, in cases in which an operation has been performed on these organs, may also excite uterine contraction. It is the same, too, with uterine affections, with changes in the tissue of the organ, in consequence of disease or the advanced age of the woman, or of its incomplete development in youth.

A strong electric shock may likewise produce the same result. Although it has been denied, yet it is evident that vivid moral impressions may occasion miscarriage. Thus, we see every day women who, much affected at the theatre, or seized with sudden fright on beholding some alarming object, have not time, frequently, to reach their homes before they are delivered. If this influence prevail at full term, its possibility at a less advanced period must certainly be admitted. In fine, this cause should also be capable of determining contractions during pregnancy, since it can moderate them during labour, a fact which cannot be questioned.

There are other causes, which appertain to the entire organism: acute and chronic affections of the mother, measles, scarlet fever, epidemic fever, and particularly jaundice and phthisis pulmonalis, and eclampsia or convulsions promote uterine action; but convulsions are very rare at an early period of gestation. The influence of certain atmospheric conditions appear to produce real epidemics of miscarriage, which can be explained in no other way. This observation has been frequently made in large establishments destined to receive lying-in women. Saucerotte mentions that the women who inhabit the summit of the Vosges are much exposed to miscarriage, and that, in order to protect themselves from this accident, they leave the mountain after they have conceived.

C. *Causes which operate fatally on the Fœtus.*—Most of the causes which I have enumerated in the preceding chapter will likewise obtain here. Thus, all external violences, besides determining premature contraction, may also destroy the fœtus, either indirectly or directly: indirectly, by occasioning congestion of the organ, which gives rise to hemorrhage fatal to the fœtus; directly, by injuring the fœtus through the uterine walls.

Repeated vaginal examinations, the presence of a pessary, coitus, cauterization of the cervix uteri, operations performed near the uterus, and criminal attempts, which I have regarded as causes of premature contraction, often occasion the death of the fœtus, secondarily, by determining hemorrhage. The same will result from remaining too long in warm baths; exciting food, disturbance of the digestive functions, any obstacle to the free development of the womb, may also affect directly the fœtus; so, likewise, with an electric shock or violent mental emotion. The possibility of this latter circumstance has been contested. But should we doubt this fact, of which authors have presented so many examples, merely because the most minute dissection has not enabled us to detect nervous communications between the fœtus and its parent? Moreover, would not the liquor amnii be an excellent conductor of electricity?

The causes appertaining to the entire organism, acute and chronic affections, &c., which are capable of exciting uterine contraction, may also destroy the child. I should likewise add to these, diseases of the skin, and especially syphilis, with which the mother may be affected. It is generally supposed that the diseases of the father are not communicated to the fœtus; however, science possesses several facts which overthrow this assertion. M. Guillemot cites one very conclusive case. A young woman, whose husband had been much diseased, miscarried several times; but, having become a widow and the wife of another husband, she went to her full term. I have now under my care two children who bear evident traces of a constitutional affection of their father.

Eclampsia almost immediately destroys the fœtus, as well as causes its expulsion.

In a word, there are several special causes which destroy the child in utero, and the most of them escape us. For example, it may be affected while in utero with numerous diseases, and become the more easily destroyed as it is less developed. Fœtuses die with all the evidences of a variolous disease, &c. Certain diseases of the membranes and umbilical vesicle, which occur at the commencement of intra-uterine life, the cause and nature of which are entirely unknown to us, may also arrest the fœtus in its development. There are other causes better understood, which have been well described by MM. Cruveilhier, P. Dubois, and Jacquemier; such as apoplexy of the placenta to a greater or less extent; abscesses of this organ, its ossification and atrophy, affections which seem to be different degrees of the same disease, and which may invade so much of the placenta as entirely to destroy its functions. I have often seen in the same placenta a multitude of these diseased points, some of which were recent, and others in a state of suppuration; while others, again, are ossified.* M. P. Dubois has

* I have repeatedly been consulted by ladies who have had several successive miscarriages, and who have not been enabled to carry the fœtus to the full term. Such a condition of things, if permitted to continue, not only strikes at the very foundation of health, but it is apt to give rise to unhappiness and discontent. These cases usually prove rebellious to the means employed for their relief, and they not unfrequently throw discredit on the accou-

frequently exhibited to his class placentas presenting these different modifications. I had one in my practice, the parenchyma of which was entirely cartilaginous. The abnormal insertion of the placenta over or near the mouth of the womb cannot, in any way, be considered a cause of abortion, not even in consequence of the hemorrhage, which always necessarily takes place. In a word, hemorrhage does not manifest itself, in this case, until an advanced period of pregnancy; it will determine then, not a miscarriage, but a premature delivery; for whether the placenta be inserted over the mouth of the womb, centre for centre, or by one of its borders, it will nevertheless preserve its vascular connexions with the cervix until the end of seven months and a half, often even of eight months; and as the internal orifice does not dilate before this period, it would only be from this time that the progressive dilatation of the orifice would gradually destroy the vascular connexions which unite it to the placenta, and thus occasion hemorrhage.

Deformed fœtuses and monsters rarely reach the full term.

The shortness of the cord may determine its rupture, or the separation of the placenta (Mauriceau, Montgomery); it may encircle with force the extremities or neck of the fœtus, impede the development of these parts, and produce undue pressure on itself. M. Guillemot reports the case of a fœtus of three months, which had on its neck deep marks caused by the pressure of the cord, and this latter, very much stretched, was partly lacerated at its root.

Hemorrhage may occur in the sheath of the cord, and the coagulum resulting from it may compress the vessels and intercept the

cheur. I could detail numerous instances of success in my own practice, where others had failed; and I ascribe my success entirely to the fact that, in treating these obstinate cases, I have been fortunate enough to reach the *cause* of the difficulty. If a female miscarry once, she is apt, from the mere influence of habit, to miscarry again; and this premature action of the uterus often begets a morbid and irritable condition of this organ. Now, if a female miscarry several times successively, without being enabled to assign any particular cause, and the ovum be examined, in numerous instances it will be found that the placenta presents an unusual appearance; that it is, in fact, *diseased*. In consequence of this morbid condition of the after-birth, it is prematurely detached from the womb; the death of the embryo, and its expulsion, are the consequences. This disease of the placenta may depend on the number of previous miscarriages (thus, as it were, debilitating the natural powers of the uterus), or on a venereal or scrofulous taint; no matter on what cause it may depend, if the accoucheur wish to carry his patient to the full term, he must first remove the cause of the disease, which determines the early separation of the after-birth. I have never failed in relieving this difficulty, when traceable to a diseased placenta, by the following treatment. In the first place, after the miscarriage all sexual intercourse must be interdicted for a given period, depending upon the action of the remedies. The patient should then be placed under the influence of mercury, and ptyalism should be produced.

I am in the habit of ordering the following formula:

℞. Massæ Hydrar., ʒj.
Pulv. Opii, gr. iij.
Ft. massa in pil., xij.
Dividenda.

One of these pills should be taken every other night, and continued until the mouth is touched. As soon as the ptyalism has passed off, I order half a wine-glass of the compound sirup of sarsaparilla to be taken twice a day, until two pint bottles have been used.

These means, together with horseback exercise, sea-bathing, and a cheerful mind, have usually, in my hands, been sufficient to overcome this morbid condition of the system, and prepare it for a successful fecundation. A most important direction after pregnancy ensues, is to enjoin a separation until the fifth month has passed, for where there have been antecedent miscarriages, there is more or less predisposition to the same accident previous to this period.—Ed.

circulation. M. Deneux has published a fact of this kind; and I have a portion of cord which, I believe, presents an analogous lesion. It belonged to the fœtus which died fifteen days before delivery, at the ninth month, of which I spoke in the article *Pruritus*, page 141.

If the patient should be predisposed to miscarriage, all the above causes act with much more force. Some women miscarry under the influence of the slightest cause; while others, on the contrary, encounter severe moral and physical disturbances without annoyance. A woman, some months pregnant, arrived from Moscow and came to La Clinique to be confined, after having travelled several hundred miles in sleds over the most frightful roads, exposed to all the privations and fatigues of so long a journey, and yet she was delivered at her full term.

§ 2. *Progress of Miscarriage (hemorrhage).*

The first phenomenon which manifests itself is, in general, hemorrhage. *At an advanced period*, the point of the uterus corresponding to the placenta is the only one which has vascular connexions with the ovum; hence the rarity of hemorrhage; *while at an earlier period* the entire ovum adheres to the uterus by the *caduca*, and very important vascular connexions unite all the parts; hence the necessity of hemorrhage. Also, hemorrhage is less abundant as the miscarriage takes place nearer the full term. It is considerable for the first three months, less after this period, and rare after the fourth month. It is also less abundant when the fœtus is expelled a long time after its death, for the uterine circulation being no longer necessary for the life of the fœtus, it becomes modified; the utero-placental vessels obliterate in part, and furnish but little blood at the time of the separation of the placenta. This hemorrhage may be internal, latent, or concealed, that is to say, it may take place either between the external surface of the ovum and internal of the uterus, or even in the membranes (which, however, is rare); it may also be external; in this case, the blood escapes through the genital organs. *This is the most frequent form.*

At a period bordering on full term, the uterus, entirely developed, enjoys a force of contraction capable of determining the dilatation of the neck, and this latter is thinner, more supple, and more easy of dilatation as the period of delivery approaches; and as soon as the mouth of the womb is opened, all the obstacles will be removed.

At an earlier period, the neck of the womb is long, rigid, and thick; it will require more force to overcome its resistance; besides, the tissue of the organ being less developed, is not endowed with sufficient contractile power to counterbalance advantageously the resistance of the orifice.

At a period near the full term, the ovum divides before its expulsion.

At a less advanced period, the ovum does not always divide, and although it is smaller than at a more advanced period, its expulsion

is not the less difficult, in consequence of its integrity, joined to the preceding causes—the resistance of the neck of the womb, and its want of proper contractile power.

At an advanced period, the annexæ, smaller than the fœtus, do not present any difficulty in their expulsion. Except in rare cases, the annexæ come away with facility.

At an earlier period, the annexæ, larger in proportion as the embryo is less advanced, will themselves constitute the entire difficulty of the expulsion. Sometimes the delivery is protracted, painful, and alarming; sometimes, even, it is impossible, and the placenta passes off in a fluid state, or is absorbed.

§ 3. Prognosis of Miscarriage (hemorrhage).

I place the prognosis immediately after the preceding article, because it is intimately connected with it.

So far as the fœtus is concerned, the prognosis of miscarriage is always unfavourable, for it is either its death which determines the miscarriage, or its death is the consequence of it; but in cases in which the miscarriage has not yet taken place, the prognosis will be the more alarming, in proportion as the hemorrhage is more abundant. However, women occasionally lose considerable quantities of blood during their pregnancy, without having the life of the fœtus compromised;* this circumstance, it must be remembered, is rare. As to the mother, the prognosis will be more serious in proportion as pregnancy is less advanced.

This proposition, admitted since the time of Hippocrates, is confirmed every day, and it is with regret that I find myself obliged to differ in opinion with M. Desormeaux. It is certainly true, however, that in some cases of miscarriage, at three or four weeks, the consequences are in general very trifling; but from this period to four months, as I have already remarked in the preceding article, miscarriage is accompanied by hemorrhage the more serious as the embryo is less developed. The expulsion being more diffi-

* A most extraordinary instance of profuse loss of blood in the sixth month of pregnancy occurred in a patient of Dr. A. D. Clement, of this city. A messenger came for me early one morning, requesting that I would hasten to visit a lady who had been taken suddenly ill. On reaching the house, I found the patient lying on the floor, in an exceedingly debilitated condition. I learned the following particulars of her case. Early in the morning, in attempting to leave her bed, she stumbled and fell to the ground. She was immediately attacked with most alarming hemorrhage from her womb; it was so profuse that in a few minutes after the attack she fainted, and it was with difficulty she could be rallied. Finding her in this situation, and learning that Dr. Clement was the family physician, I urged the necessity of immediately sending for him, and in the mean time I proceeded to meet the indications of the case. The patient was laid on the bed, her hips gently elevated, and the most perfect repose enjoined. On introducing my finger into the vagina, I discovered that the mouth of the womb was not only considerably dilated, but it was quite soft and yielding. Cold applications were made use of to the abdomen and thighs, and a drachm of laudanum administered. This patient could not have lost less than two quarts of blood from her womb; and from the dilated condition of the orifice, together with the presence of actual pains, it was reasonable to suppose that premature labour was inevitable. The profuseness of the hemorrhage now ceased, and was reduced to an occasional oozing of blood per vaginam. The pains seemed, however, to increase in violence; and with the hope of checking them, I introduced into the rectum two opium pills, containing a grain each; this had the desired effect. In the mean time Dr. Clement arrived, and I left the patient in his charge. I heard nothing more of the case for three or four months, when the doctor informed me that the lady had gone to her full term, and had been delivered of a healthy living son.—Ed.

cult, painful, and protracted, the woman continues for a longer period exposed to the consequences of this hemorrhage. The difficulty or impossibility of extracting the placenta subjects the woman to the same hazard, and, moreover, exposes her to the consecutive dangers of the manipulations employed to bring away the after-birth, and to the consequences of a retention of this organ, and of its *putrid absorption*, when it cannot be delivered.

The rapidity of the hemorrhage, the strength of the patient, the profusion of the discharge, will also influence the danger of this accident. However, some women lose large quantities of blood without being much weakened. My friend, Dr. Devilliers, is now attending a lady who has lost a considerable quantity of blood, without having her pregnancy interrupted, or her health much affected by it.

As to the remote effects of miscarriage, such as chronic affections of the genital organs, which appear at an advanced age, they are perhaps more serious after miscarriage than after delivery at full term. But the immediate consequences are as grave in the one case as in the other. All things being equal, I have a larger number of cases of women affected with metro-peritonitis after miscarriage than after delivery at full term.

The cause of miscarriage will modify its danger; it is more alarming when it is occasioned by violence, when accompanied by uterine congestion, or when it supervenes in the course of an acute inflammation. I have known it prove fatal in a few hours in jaundice; finally, the most dangerous miscarriage is that excited by internal medicines or culpable manipulations. After the expulsion of the fœtus, although the milk fever and lochial discharge are proportionally slight in the earlier periods of pregnancy, yet the after treatment generally requires much more care.

§ 4. *Diagnosis of Miscarriage.*

The diagnosis of miscarriage is divided into three periods: *before it has taken place, during its occurrence, and after it has taken place.*

A. *Before it has taken place.*—The symptoms which will enable us to foresee a miscarriage will vary according to the period of pregnancy, and the cause which produces it. As I have already observed, it is sometimes accompanied by such slight pain, that it passes unperceived, and the entire ovum, covered with blood, is lost in the dejections, or cloths, or is mistaken for a clot. Under such circumstances, we cannot ascertain, in time to prevent it, that miscarriage is threatened.

However, the attention of the accoucheur should always be awakened with reference to women who are subject to profuse menstruations, who experience a sensation of fulness in the pelvis, pain in the loins, and especially a slight sanguineous discharge; in a word, all the symptoms of local plethora. General plethora and premature contractions should always be objects of special moment to the accoucheur; but, unfortunately, most of the precur-

sory symptoms are not, in general, very evident until after the miscarriage is inevitable. How, in a word, can we distinguish whether the uterine pains and sanguineous discharge are owing to a return of the menstrual evacuation, or to a miscarriage, when there is no symptom establishing the existence of pregnancy? For the pains which accompany a difficult menstruation very closely simulate those of childbirth, although authors have mentioned as a distinctive sign, that in miscarriage the discharge precedes the pains, while the contrary occurs in relation to the menses; but this does not always take place, and the distinction is not so readily made as to justify, in cases of doubtful miscarriage, other means than repose and laudanum, with a view of preventing the accident; for blood-letting and refrigerants may determine very serious consequences in cases of simple return of the menses.

But at a more advanced period, pregnancy being no longer doubtful, the symptoms of threatened miscarriage are more easily appreciated; for it is rare that the menses, when they occur during pregnancy, continue beyond the period of four or five months. Besides, we should apprehend miscarriage when a discharge of blood takes place in a woman who has passed the first half of her pregnancy without being troubled with it. The various symptoms of local plethora, too, will be certain indices of threatened miscarriage. When the bad health of the mother, or some slow cause acting upon the ovum, determines miscarriage, we will observe, according to M. P. Dubois, chills followed by heat, loss of appetite, nausea, thirst, coldness of the extremities, lassitude, palpitation, a sensation of sorrow and depression, a painful feeling of cold and weakness in the abdomen, bearing down in the pelvic excavation, and an illusory desire to urinate; under these circumstances, we should expect every moment to see a miscarriage without our being able to prevent it. Also, when the female perceives an inconvenient weight in her abdomen, moving according to the movements of the body; a febrile action in the evening; and joined to these symptoms, all the other signs indicating the death of the fœtus, milk fever, secretion of milk, falling away of the breasts, cessation of the active fœtal movements, and of the pulsations of the heart.

If miscarriage be apprehended in consequence of violence, the woman experiences an acute pain either in the loins or in some point of the abdomen; this pain diminishes, and reappears again with more intensity. If the fœtus have died, the woman experiences all the symptoms I have just enumerated, and labour declares itself, ordinarily, nine days after the accident. But there is nothing fixed about this rule, fœtuses having remained in the womb several months after their death.

But how are we to prevent a threatened miscarriage, where the cause is internal hemorrhage, and pregnancy is but little advanced? If the blood is effused in the interior of the ovum, the quantity will be too small to be appreciated by any increase in the volume of the uterus, or to occasion any serious effects on the health of the

mother; the death even of the *fœtus* will often be unknown, and the hemorrhage will pass altogether unperceived.

Should the blood be accumulated between the placenta and uterus, when a part of the membranes are separated in order to allow the blood to collect, the coagulum which would result would be too small to make its presence perceptible. Certain general effects, such as slight tension of the abdomen, and a dull feeling of fulness in the pelvis, will alone denote the formation of it; its effects on the *fœtus* will sometimes not be appreciable. When pregnancy is more advanced in the first case of hemorrhage in the membranes, the uterus assumes an unusual development, which may be recognised either by an abdominal examination or the vaginal touch; it will be at once perceived that this development is not in correspondence with the period of pregnancy. The death of the *fœtus* being the common consequence of this accident, all the usual symptoms will manifest themselves. If the blood be accumulated between the membranes and uterus, the development of the organ will be readily appreciated; it will be irregular and bilobed; we may sometimes distinguish the point in which the sanguineous collection has taken place, because in one spot we will feel an evident fluctuation, without perceiving the *fœtal* movements. This hemorrhage may also become manifest by the death of the *fœtus* and its effects on the health of the mother; and yet it may be considerable without either the one or the other suffering the slightest inconvenience. However, most frequently, in both instances, the woman will complain of weight in the rectum, pains in the loins, and dragging about the groins; this condition of things may continue until the quantity of blood becomes so considerable as to force the womb to contract, when there will be a discharge of blood externally. But, in many cases, there will be much doubt.

When the *fœtus* has ceased to live, its prolonged sojourn in the uterus is harmless to the mother while the membranes are entire; it is, on the contrary, often very serious when the membranes are ruptured. In the former case, the species of decomposition which it undergoes, although it is so called, does not resemble a veritable putrefaction; the cadaver has no smell, the soft parts are flaccid, the head sinks under its own proper weight, the ribs are seen through the soft parts, and the front of the chest is very much flattened; the sunken abdomen, almost hollow at the umbilicus, forms on the sides two rounded prominences; the skin, especially that of the abdomen, is of a brownish-red colour, without any appearance of a green tinge; the cord is no longer twisted upon itself; it is soft, reddish, and filled with a brownish fluid; the epidermis peels off with facility, and leaves the dermis bare, which is glutinous, and of a lively red colour. The epidermis of the feet and hands is white, and in folds.

In the latter case, on the contrary, the access of air into the cavity of the uterus, aided by the elevated temperature of the organ, causes decomposition to proceed very rapidly. There passes from

the genital organs a blackish fluid, a solution of the putrid tissues, possessing extreme fetor; the uterus becomes a centre of infection; the patient is attacked with a low fever, to which she rapidly yields if nature or art do not relieve her.

Signs indicating the Presence of Miscarriage.

In the commencement of pregnancy, when it cannot be ascertained by any certain signs, how are we to distinguish the reappearance of the menses, accompanied by uterine pains, from miscarriage? This diagnosis is extremely difficult to establish, as I observed in the preceding chapter.

Until the third month, if the existence of pregnancy be well established, the diagnosis becomes extremely easy. The appearance of the menses being rare in pregnancy, any discharge of blood which may manifest itself at this period should be watched with solicitude by the accoucheur. But it may happen that, at this term, pregnancy cannot be detected; under these circumstances, we will often be in doubt. However, if, in a woman who is not subject to irregularities in her menstruation, a sanguineous discharge take place after a delay of some weeks; if this discharge be accompanied with pains; if the pains be not modified by the discharge, and become more and more acute and separated by intervals of calm; and if the neck, slightly dilated, permits the introduction of the extremity of the finger, we should apprehend a miscarriage. From the end of the third month, the diagnosis of pregnancy, more easy to establish, will enable us also more readily to recognise the signs of miscarriage. All the phenomena of a real labour declare themselves; they are accompanied by a discharge of blood more or less abundant, according to the period. The escape of a liquid similar to the liquor amnii is, in most cases, a certain sign of threatened miscarriage. However, this phenomenon may take place without the rupture of the membranes, and then it ceases to be an indication of an approaching miscarriage. The following is M. Nægele's explanation of this phenomenon, which, according to him, is not rare: "A serous exhalation takes place gradually between the external surface of the membranes and the internal surface of the uterus, and collects in different points; and, when these collections have become sufficiently large to excite the action of the uterus, this organ contracts; the liquid, in detaching the inferior portion of the membranes, reaches the lower point of the uterus, and escapes through the orifice. If the contractions which determine this evacuation are perceived, this phenomenon simulates the more closely the escape of the liquor amnii; but frequently this expulsion takes place in consequence of contractions of which the patient is not conscious."

If, after the third month, to the preceding signs should be joined those which characterize the death of the fœtus, the diagnosis will be more certain. However, the death of the fœtus does not always involve the cessation of pregnancy. One of my patients, to whom I called M. P. Dubois, presented a very remarkable case of

this kind. This lady, already the mother of two children, became pregnant a third time, and reached the third week of her pregnancy without inconvenience; but at this period she experienced a feeling of lassitude, accompanied by pains in the loins; she complained of pricking sensation in the breast. This condition of malaise continued for several months, without any reappearance of the menses. The patient, who, for the rest, had experienced, from the commencement, all the feelings of her first two pregnancies, and having no doubt that she was again pregnant, although her abdomen did not become developed, requested my advice. She was, at this time, five months and a half pregnant. I noticed the development of the uterus, but it was far from being in correspondence with the presumed term of gestation. The active motions of the fœtus were not perceived, and auscultation afforded no sign.

At six months and a half, 23d December, 1838, I was again summoned to this patient, and delivered her, after a regular labour, accompanied with tolerable hemorrhage, of an ovum four inches in length, which contained an embryo at most not more than four lines. It was reddish, and floated in a liquid of a brick-red colour. As is evident, the fœtus, in this case, ceased to live at fifteen days or three weeks, while the placenta continued to grow in the uterus.

In case of twins, one may be expelled before term, and the other continue to live. M. P. Dubois noticed this fact in a lady who lived at Sèvres, and also in a female in the Maternité.

Signs indicating that Miscarriage has taken place.

It is of great importance to ascertain, in the first place, whether, in miscarriage, the fœtus and membranes have been expelled, or whether the placenta still remains in the uterus.

The first precaution for the accoucheur to take, on arriving at the bedside of a woman threatened with miscarriage, after having learned from her all the facts calculated to enlighten his mind, is to examine the evacuations and bed-clothing, in order to ascertain, if possible, whether the fœtus has been expelled. If he observe any coagula of blood, he should have them washed and separated, in order that they may be distinguished from a fœtus. The woman should be recommended to use a vessel for her evacuations, in order that the embryo may not be lost; and the clothes should be put one side, so as to be examined on his return.

Without these precautions, it will often be very difficult to ascertain whether miscarriage has taken place or not. The degree of dilatation of the neck of the womb cannot, in most cases, determine this question. Before miscarriage, the neck may be dilated without our being able to feel anything; often, it will be found quite closed. After the expulsion of the fœtus, it may remain open if the placenta be still retained in the organ, or if a coagulum be formed there; but it may also close on these substances. Frequently even, immediately after the expulsion, it closes, and where pregnancy is but little advanced, it assumes the form it had before the

accident. How, then, can it be ascertained that miscarriage has taken place?

So far as the pains are concerned, there is the same doubt and uncertainty; they may be continued by the presence of the placenta and of a coagulum; or, after the complete expulsion, they may be determined by a peculiar morbid condition, and continue for a longer or shorter period.

We must, therefore, search carefully for the fœtus, and endeavour to distinguish it from the membranes and coagula.

§ 5. *Treatment.*

The treatment consists in preventing and arresting miscarriage, and in remedying the accidents which may attend it.

The Prevention of Miscarriage.

If miscarriage should be occasioned by weakness or the general bad health of the patient, we should avail ourselves of the interval between her pregnancies to endeavour to combat these causes.

Thus, weak, cachectic women, whose constitution has been injured by protracted disease—those especially in whom the inferior segment of the womb participates in this general state of atony and relaxed condition of the tissues, should be put upon a tonic regimen; preparations of iron, cold sea-bathing, mineral waters, &c. These means should be continued during pregnancy, avoiding, however, such as cannot be used without fatigue to the patient. It will sometimes be necessary to enjoin rest during the first months. The circumstances which accompanied the preceding miscarriages, if there should have been any, will guide the accoucheur in this particular. For example, if the expulsion of the fœtus should have previously taken place without any appreciable cause other than the laxity of the fibres about the neck of the womb, repose will be indicated. Another circumstance frequently determines miscarriage in debilitated women who menstruate irregularly, and are affected with leucorrhœa; it is a sanguineous exhalation, sometimes even a profuse hemorrhage, which destroys the fœtus. In this case, the same means are to be employed; and, moreover, we should endeavour to combat all the causes of local congestion, and prevent especially constipation by frequent enemata; and a few days before the expected return of the menstrual evacuation, if the patient should not be too weak, it would be proper to make a small revulsive bleeding from the arm of one or two ounces at most: should the bleeding not be advisable, mustard cataplasms should be placed upon the back and arms, and everything should be avoided which can possibly accelerate the circulation in the inferior extremities.

The rigidity of the fibres of the body of the uterus, its excess of contractility, must be treated by entirely opposite measures: warm baths, a mild regimen, general bleeding, and laudanum injections.

In case of prolapsus of the womb, the organ should be supported, but it must be remembered that the presence of a pessary may determine miscarriage; its employment should be closely watched.

It would, however, be better to depend upon absolute repose during the first months, until the uterus ascends above the superior strait, it being understood that the woman should sedulously avoid all fatigue and violent effort.

The general vices of the constitution must be treated by their appropriate remedies, and, as far as possible, in the interval between the pregnancies; or, at an advanced period of gestation, especially when there is a syphilitic affection, for the mercurial treatment has been regarded by some authors as fatal to the fœtus.

The causes which are connected with the diseases of the ovum or fœtus are beyond the pale of art.

Finally, the hemorrhagic tendency, which manifests itself in women whose menstrual evacuation is very abundant, and which is a frequent cause of miscarriage, should be treated during the absence of pregnancy by spare regimen; and during gestation, especially when the female has already miscarried several times at the menstrual periods, and when there are symptoms of general or local plethora, we should abstract each month from the arm a small quantity of blood a few days before the menstrual epoch, and this should be continued until the period of the former miscarriages has passed. I insist that only small bleedings should be practised during pregnancy, although more copious venesection is sometimes called for when the plethora is great; but I have often known profuse bleedings occasion effects the reverse of those anticipated; and I am aware that the majority of physicians are not sufficiently guarded against the effects of these copious depletions.

Desormeaux, in cases of large hemorrhoidal tumours, and in phlegmasiæ of the neighbouring organs, the bladder and rectum, recommends local bleeding. I have often obtained good results from it, and M. Gendrin observes that the application of leeches to the groins in local plethora will be followed by the happiest effects. I must admit, however, that in this case I prefer the general abstraction of blood. In a word, judicious bloodletting is a powerful means by which I have been enabled to carry to their full term a number of women who, until they had been confided to my care, had miscarried several times. I might cite many instances, but I refer the reader to the memoir which I published on this subject.*

As useful precautions, which should be employed, no matter what may have been the cause of preceding miscarriages, or what circumstances may induce us to apprehend their recurrence, we should recommend the woman to avoid, at the commencement of pregnancy, constipation; and with this view, she should make frequent use of warm enemata. Should these prove insufficient, she must not have recourse to any drastic purgative, but a slight laxative should be administered—castor oil, for example. Physical and mental excitement, violence, horseback exercise, riding in a carriage, warm bathing frequently repeated and prolonged, should all be sedulous-

* *On Miscarriage, and the Means of preventing and arresting it.*

ly avoided. If some disease foreign from pregnancy should require an operation, it would be indispensable, especially if there be reason to fear miscarriage, to defer it until after delivery, if possible; such, for example, as the extraction of a tooth, the breaking up of a stone in the bladder, cauterization of the neck of the uterus, &c., &c.

The Means of arresting Miscarriage.

The mode of treatment adopted by Professor P. Dubois, and which I have frequently found successful in his hands at La Clinique, in cases in which miscarriage appeared inevitable, consists in the employment of two agents, which I have already recommended in the preventive treatment.

Bleeding and Laudanum.—The opportunities which my father-in-law, M. Honoré and myself have had of employing this method of treatment at the Hôtel Dieu and La Clinique, as also in our city practice, have resulted most satisfactorily to both of us.

But before proceeding farther, it will be proper, in order to understand the *modus operandi* of these remedies, to consider briefly the contractile properties with which the uterus is endowed at all periods of life, and which it possesses in a higher degree during gestation.

Like all the hollow viscera of organic life, the uterus possesses two kinds of contractility: the first is the *organic contractility proper*; the second is the *contractility of tissue*, or *retractility*.

The action of these two kinds of contractility, much more manifest in the uterus than in all the other organs subjected to the same influence, enables us to establish clearly its distinctive characters.

A. The proper Organic Contractility of the Uterus.—The action of the organic contractility of the uterus consists in a rapid contraction of the organ; almost always accompanied by pain, returning by paroxysms, and accomplished with violence, in order to expel from the uterine cavity the fœtus and annexæ: this property of the uterus is the most powerful agent in parturition.

This contractile power resides in all parts of the uterus; but as the womb is an organ of expulsion, nature has concentrated the greatest amount of its expulsive forces in the superior portion of this organ, in the point opposite to that, which affords passage to the child.

Ergot can increase this property; *opium and bloodletting may arrest its action.*

B. Organic Contractility of the Tissue.—Distinct from the former, the organic contractility of the tissue exists in the whole extent of the walls of the organ, but exhibits itself more especially in certain points. It is in virtue of this property that the uterus contracts, after it has expelled the fœtus. But as an essential condition for its exercise, it is necessary that the emptying of the uterus be accomplished gradually.

This property, which appertains to all the other organs, is much

more marked in the uterus ; in proportion as the fœtus is expelled, the tissues return gradually upon themselves, and finally close up the mouths of the bloodvessels. Without this wise provision of nature, the vascular system, excessively developed during pregnancy, would have preserved the same conditions ; and, after delivery, the mouths of the vessels, remaining open upon the internal surface of the uterus, would have poured out blood abundantly and death would soon have followed this hemorrhage.

Moreover, the fundus of the organ is, in the majority of cases, the seat of the insertion of the placenta, and with this view, it is provided with a most active vascular apparatus, and is endowed with this property of contraction in a much higher degree than the inferior portions ; it is this absence of retraction in the cervix of the womb that renders hemorrhage so frequent in cases of insertion of the placenta over the orifice or in its vicinity.

Immediately after delivery, it is easy to appreciate this difference ; the fundus presents in the hypogastric region a hard and globular body ; the neck, on the contrary, is soft, relaxed, and open.

Unconnected with parturition during life, the contractility of tissue, always going on without pain, and also without consciousness to the patient, will sometimes be sufficient to determine delivery a short time after the death of the mother. Bichat thinks that putrefaction alone can destroy this faculty.

Finally, this property is increased by ergot ; but it resists all moral influences, and, what is very important, the influence of *bloodletting* and *opium*.

These properties are so distinct, that one may exist without the other. Thus, after a rapid expulsion, effected under the influence of energetic contractions, the uterus does not always return on itself ; while, on the contrary, after the extraction of the fœtus has become necessary, in consequence of inertia of the womb, this organ, gradually emptied, contracts.

The study of these different properties will show us that agents which may suspend the exercise of the organic contractility without at all impeding the retractility of tissue, will become precious remedies in cases of threatened abortion, not the result of disease of the ovum, or of the death of the fœtus, but merely of a premature action of the organic contractility.

These agents are *opium* and *bloodletting*, separately or united.

As one circumstance which will vary the treatment, authors have made a distinction between the signs of abortion caused by the death of the fœtus, and those which characterize a miscarriage depending on a cause which may be remedied ; and this distinction is based upon the fact that we must abstain from all treatment which has for its object to arrest labour, and that even we should favour the expulsive process when the child has ceased to live ; and when it is living, we must endeavour to prevent it. But this distinction, which is sometimes easily made when pregnancy is sufficiently advanced to permit auscultation, cannot be arrived at when we have only uncertain signs for a guide.

In all cases of doubt as to the life of the fœtus, the accoucheur should act in reference to the preservation of the child. These remedies, applicable in all cases, will preserve the fœtus if that be possible, and will not prevent miscarriage if it be inevitable, only the expulsion will sometimes be a little more retarded; but the delay which these remedies will occasion in the termination of the miscarriage, if it be inevitable, must be viewed as a very slight disadvantage in comparison with the success that attends them in preserving the life of the fœtus and the health of the mother. In cases of failure even, this medication would still be beneficial, for moderates the acute pains which accompany, and so often follow miscarriage. This practice is generally adopted in England.

For the sake of clearness as to the indications to be fulfilled, I will divide miscarriage into three periods.

First Period.

Uterine pains, passing from the umbilicus towards the pelvic cavity, accompanied with hardness of the abdomen, and often with pain in the loins, with a sensation of weight about the rectum, and with general lassitude.

The uterine portion of the neck is softened and open; and tension of the membranes at each contraction, when pregnancy is advanced.

Treatment.—Absolute repose, horizontal posture, spare diet, and bleeding from the arm, if there should be general or local plethora; a laxative enema, and after it has operated, a gill of fluid in lavement with 18 or 20 drops of the laudanum of Sydenham, which the patient must retain. If the contractions should cease, do nothing more; if not, continue the anodyne injection in 15 and 20 drop doses every half hour until the labour ceases. We will rarely be obliged to employ it often, or increase the quantity; the first administration will ordinarily suffice, if the fœtus be viable and alive, and if the woman be in a normal state.

Second Period.

The same symptoms as in the first period; and, in addition, muco-sanguineous discharge, more or less hemorrhage, thinning of the orifice, greater degree of dilatation, and protrusion of the membranous sac.

Treatment.—Just the same as in the preceding case; and besides, cold lemonade, and cold compresses on the thighs; but, in general, the treatment here is less efficacious. However, there are numerous successful cases cited. Velpeau states that Mauriceau, Puzos, Nægele, and Stoltz have seen instances in which, after abundant hemorrhage, miscarriage did not follow.

Third Period.

All the preceding symptoms; in addition, profuse hemorrhage, and rupture of the sac. Here no treatment will avail.

However, M. Desormeaux mentions a case in which the woman

went on to full term after hemorrhage, the formation and rupture of the membranous sac.

May not this fact, observed by a man who is great authority, be explained differently? May it not have been one of those cases in which there is abundant discharge of water during pregnancy, to which I have already alluded, and of which M. Nægele has given a very satisfactory explanation? (*De Hydrorrhœa Gravidarum*, 1822, auct. J. B. Geil.)

May not, in this case, the pains, which have caused the expulsion of one or more watery collections, have been more violent than usual, and may others not have been accompanied by a sanguineous discharge caused by the separation of a part of the membranes, and by the tension of the amniotic sac, which remains intact, although supposed to be ruptured, in consequence of the great quantity of liquid that escapes?

This explanation is alone admissible, for it is physically impossible that a rupture of the membranes, especially if accompanied by contractions, should not terminate in the expulsion of the fœtus.

The administration of laudanum in so large a dose may inspire apprehension in the minds of some practitioners, but I have never known it followed by any serious consequences; sometimes slight somnolence and headache, and general numbness, a passing narcotism, which cold lemonade in a weak infusion of cold coffee will quickly remove. M. P. Dubois has never known this mode of treatment prove injurious to the child.

Be this as it may, it will always be proper to admonish the assistants that these symptoms may possibly follow the administration of opium, in order that they may not become alarmed should they occur.

Treatment of the Accidents which may complicate Miscarriage.

Hemorrhage is one of the accidents which most usually accompany miscarriage; it may precede, accompany, or follow the expulsion of the fœtus. Most frequently, hemorrhage occasions miscarriage; sometimes, however, it is only the consequence of it. It may be slight or very abundant. In the former case, we may content ourselves with the means indicated in the preceding paragraph (second period). But should the hemorrhage continue so profuse as to endanger the life of the mother, miscarriage becomes inevitable, and the accoucheur should employ all the remedies proper to arrest the hemorrhage, when even these remedies might be of a nature to determine the death and expulsion of the fœtus. In fine, hemorrhage is one of those accidents which, by its sudden occurrence and the rapidity of its progress, may compromise most seriously the responsibility of the accoucheur, and which requires on his part a prompt judgment, great prudence, and especially self-possession. He should have recourse to refrigerants; but no matter how alarming the hemorrhage, these should never be applied over the whole surface of the body. They should be limited to the thighs and lower portion of the abdomen; and care should be taken

to keep the superior portions of the body warm. In this way, a useful derivation will be obtained, and we will thus concentrate towards the organs essential to life the quantity of blood necessary for the maintenance of their functions.

If, on the contrary, cold applications should be employed all over the body, they may be suddenly followed by a fatal chill; and in all cases they are accompanied by pain and great anguish.

A cold lavement may be employed; but vaginal injections of this nature are not to be used; they only serve to dilute the clots and increase the hemorrhage. The accoucheur should constantly direct his attention to the pulse and countenance, and, if it becomes necessary, he should apply the tampon.

Each author has recommended a peculiar kind of tampon; some suggest that a fine linen handkerchief be introduced into the vagina, commencing with one of the corners, until the vagina is completely filled; others advise to introduce with the finger a compress, and afterward to secure it with cotton, lint, &c., &c. Some also recommend to have these substances saturated with vinegar or some astringent liquid. Tamponing in this manner is very painful, and frequently it does not completely close up the vagina. The best mode of applying the tampon is, undoubtedly, as follows: introduce, up to the neck of the womb, a number of dossils of lint or cotton connected by a thread, which is to be withheld externally; these dossils must be lubricated with cerate. In order to introduce them, I use the speculum and the tampon forceps. These instruments are not indispensable, but they enable us to place the tampon much more accurately; after having well filled the upper portion of the vagina with dossils, I then introduce lint in sufficient quantity to fill the entire vagina, and the speculum is gradually withdrawn; when the speculum is out of the vulva, the vagina is completely filled up. Nothing now remains but to maintain the tampon in situ by means of compresses and a T bandage.

The tampon, thus applied, will oppose effectually the escape of blood; it forces it to coagulate, by absorbing its serous portion; a coagulum is formed, and the mouths of the vessels are thus closed.

But with the undoubted advantages for the mother, it cannot be denied that this procedure is attended by serious inconveniences for the fœtus; it irritates the cervix by its presence, and solicits the reaction of this portion upon the fundus of the organ; the uterus contracts, the cervix softens and dilates, and if the hemorrhage be arrested when the tampon is removed, the miscarriage will be found imminent. Notwithstanding this, however, the tampon is not the less valuable; for, when the hemorrhagê is serious, everything should be sacrificed to the safety of the mother. There are some women who cannot endure, even for a few minutes, the introduction of the tampon. In them, it occasions a most painful distension of the vagina and weight in the rectum. In cases of the insufficiency of the tampon, or where its introduction cannot be borne, we are then compelled to do all in our power to promote the evacuation of the contents of the womb.

To facilitate Miscarriage.

Most of the remedies which the accoucheur will find himself forced to employ in order to arrest hemorrhage will frequently compromise pregnancy; such, for example, as the tampon and ergot. If, therefore, it should become necessary to promote miscarriage, it will be sufficient, for the first month, to insist on these same means. But care must be taken not to rupture the membranes with a view to favour the expulsion of the fœtus, for it is very important, on the contrary, that the ovum be expelled entire. It is only at a more advanced period of pregnancy that we will be authorized to separate the ovum in order to facilitate the expulsion of the fœtus, because then, if the placenta should not come away, the size of the uterus will permit the introduction of the hand for the purpose of extracting it.

Delivering the Placenta.

During the first months, the placenta will frequently be expelled at the same time as the fœtus, and the ovum then passes out entire; but often the membranes rupture under the influence of uterine contraction, the waters escape, and the fœtus is expelled; then the contractions cease, the cervix returns gradually on itself, and the placenta is retained within the cavity of the uterus. After a few hours the contractions recommence, and the expulsion of the annexæ is effected. However, most usually the cause that has retained the placenta in the first instance continues to retain it for several days; the complete separation then takes place, and the placenta is expelled. But from the time the fœtus has been delivered until the final expulsion of the placenta, there is constantly a discharge of blood, more or less abundant. The presence of the placenta in the cavity of the uterus has caused this hemorrhage, by opposing the complete contraction of the organ, and by favouring the afflux of blood into its walls. The accoucheur is frequently obliged to aid the delivery of the placenta, in order to save the woman from the danger of bleeding, at the same time that he employs the proper means to combat this accident. If the placenta should be detached, it will be found more or less engaged in the neck of the uterus, and two fingers will then suffice to extract it; if necessary, the false conception forceps may be employed. Authors have recommended, in this case, the use of the speculum as a means proper to facilitate the attempts at delivery, but the blood and clots constantly passing out of the vagina will materially interfere with the utility of this instrument. If the placenta should still be adhering to the womb, and if the condition of the cervix will not permit it to be seized, its extraction cannot be accomplished; and we must then depend upon refrigerants, ergot, and the tampon.* This is the course to be pursued in cases in which the accoucheur, having been present from the commencement of the miscarriage,

* The tampon may be used at this period, notwithstanding the rupture of the membranes, without any fear of serious internal hemorrhage; for the development of the uterus is not such as to warrant apprehension on this ground.

is positive that the fœtus alone has been expelled, and that the placenta is yet retained. But when he is called in after the efforts of the womb have continued for some time, and cannot examine the clots of discharged blood, he will necessarily be in doubt as to the cause of the hemorrhage, notwithstanding all the assurances of the assistants. If, however, on making a vaginal examination, he should recognise the presence of the placenta, he should endeavour to extract it; but should the neck of the womb be closed, and thus prevent him from ascertaining the presence of this body in the cavity of the uterus, what should then be his conduct? If the hemorrhage be slight, as he does not know whether the miscarriage has taken place or not, and if the latter, he may hope yet to save the fœtus, he should limit himself to the means I have already indicated (refrigerants, laudanum, &c.); if the hemorrhage be serious, he ought to do everything to arrest it. Thus, he will administer ergot, apply the tampon, &c.

However, whatever may be the points of the case, no forcible attempt must ever be made to overcome the resistance of the cervix; this would be the most certain means of aggravating the hemorrhage, without in the least facilitating the delivery.

When the placenta is completely separated, and retained in the uterus, frequently there will be no hemorrhage; but there is another series of accidents to combat. The introduction of a small quantity of air, and the heat in the uterine cavity, will cause rapid putrefaction of the placenta; the lochiæ become fetid, and all the phenomena of the absorption of this putrid mass declare themselves. These results must be opposed by injections and antiseptics internally.

· Injections into the vagina should be composed of a decoction of quinine, one to three grammes to one hundred grammes of water; or of the chloride of sodium, a spoonful to one hundred grammes of water.

The decoction of quinine, sweetened and acidulated, must be administered internally; potions of the acetate of ammonia, in the dose of one to two grammes in a hundred grammes of some aromatic infusion; and if nervous symptoms should manifest themselves, camphor should be given in pills, in the dose of thirty to sixty centigrammes, or musk, in the dose of ten to twenty centigrammes. But we should especially insist on the employment of ergot, and, if it be possible, the uterus should be cleansed with emollient injections, thrown up gently by means of a canula; and if the mouth should be closed, we must abandon this method, and limit ourselves to simple vaginal injections frequently repeated.

Sometimes, however, these serious results do not take place, and the placenta is thrown off in a fluid state, or is gradually absorbed. Examples of this absorption are cited by authors. This absorption may take place during the first months, in consequence of the small size of the placenta; but the development acquired by this body at a more advanced period, if it does not entirely exclude the possibility, should at least render the occurrence of this phenomenon

extremely rare ; and in this latter case, it is always attended with very severe symptoms, which we should endeavour to prevent by all means of extraction reconcilable with the safety of the mother. In fine, whenever the miscarriage takes place at a period of gestation which will permit the introduction of the hand into the uterus, the extraction of the placenta should always be effected.

CHAPTER V.

PREMATURE LABOUR.

WE understand by *premature labour* the expulsion of the foetus from the period of viability to the full term of utero-gestation. Most of the causes capable of determining miscarriage may also occasion the expulsion of a viable foetus before term.

The progress of this accident is more regular, and it resembles more delivery at the full period, in proportion as pregnancy is more advanced ; but previous to the eighth and a half month, the changes in the cervix necessary to the accomplishment of a normal delivery have not taken place ; its progress, therefore, presents some irregularities. Thus the first stage of the labour, during which the dilatation of the neck is effected, will be longer than at full term. Before the cervix dilates, it must become completely effaced, and most frequently this demands considerable time, and is accomplished only under the influence of energetic contractions, which are frequently accompanied by a febrile paroxysm.

When the dilatation is once effected, the second period of expulsion will be more rapid than at term, which is explained by the small size of the foetus.

The same means recommended for the arrest of miscarriage are to be employed with a view to prevent premature delivery.

The patient will require the same attention as if delivered at full term ; with the exception, however, that as the delivery ordinarily proceeds with more rapidity, it will be proper to retard the expulsion in order to prevent inertia of the womb, which might result from too quick an escape of the foetus.

CHAPTER VI.

ATTENTIONS DURING PREGNANCY.

THE pregnant woman is more excitable and sensitive than she is under ordinary circumstances. She should therefore avoid all atmospheric changes, which might cause in her acute affections of

the lungs; cough, as I have already observed, is a frequent cause of miscarriage.

She should wear a corset without whalebone, in order to give support to the breasts and abdomen, without, however, compressing them.

If she intend to suckle her child, it will be proper to recommend her to use a nipple shield, in which the nipple may lodge; this will be a proper means of preventing the flattening of the nipples, and will favour their projection. The child will experience much less difficulty in seizing the breast, if this precaution be attended to.

In respect to her person, the patient should avoid baths, general ablutions, and warm lavements.

She should never put her feet into water; their cleanliness may be preserved by simply washing them.

If constipation should not yield to simple injections, gentle laxatives must be administered.

In a word, the female should avoid riding in carriages, especially during the first months; and also crowded assemblies, and all physical and moral excitement. She should exercise moderately, without fatiguing herself, and partake of wholesome and abundant food; she should not be permitted to live exclusively on diet that is not nourishing, because she fancies it; but, at the same time, she must not be altogether deprived of it.

Thus, she may be permitted to eat solids and fruits; she may take coffee and liquor if she desires. But the repeated use of spirituous drinks must be interdicted.

It must not be supposed that this interdiction is necessary only among the poorer classes. I have known women in the highest walks of society who, when not pregnant, drank nothing but water, upon whom it became absolutely necessary to enjoin this restriction during their gestation.

CHAPTER VII.

CIRCUMSTANCES WHICH WILL GIVE US REASON TO SUPPOSE THAT A WOMAN WILL MAKE A GOOD NURSE.

It is very difficult, during pregnancy, to ascertain positively whether a female will make a good wet-nurse. I have known women to present all the appearances of excellent nurses: large, strong, with their breasts well developed, and yet have no milk; while others, weak and delicate in appearance, and who, being desirous of nursing, notwithstanding all representations to the contrary, proved capital nurses. In general, it is rare that a woman cannot nurse if she be in good health, and observes all the precau-

tions of which I shall speak more in detail in a special article on lactation.

We may, therefore, conclude that a female will be able to nurse her child if she be in good health, if she be not labouring under disease which may be transmitted, and if the breasts, of the ordinary size, be marked on their surface with bluish veins; if the areola be elevated, the nipple prominent and well pierced, and especially if a sero-lactescent fluid be discharged on slight pressure. She should also possess a good disposition, and avoid sudden and frequent emotions; she should live in a healthy position, and particularly in the country. But if she should possess a lymphatic temperament, an irritable disposition, or be endowed with too great a degree of sensibility, she should be dissuaded from nursing, even if she present all the necessary physical characteristics.

And the absolute impossibility of nursing her child should be pointed out if she cannot leave the city, and if she reside in a confined and damp section, where the sun cannot penetrate.

CHAPTER VIII.

INFLUENCE OF PREGNANCY ON DISEASE.

SEVERAL diseases occur, become suspended, or disappear during pregnancy, such as headache, toothache, and nervous affections of the face. I saw at La Clinique, in a female named Aglaé Masson, a goitre become developed under the influence of pregnancy, increase during labour, and gradually disappear after delivery.

Other diseases existing before conception, and which until then present nothing serious, frequently assume an alarming character under the influence of gestation; some slight affections disappear completely. Phthisis pulmonalis frequently becomes modified during pregnancy, and is succeeded, apparently, by perfect health; but this, for the most part, is but temporary. After delivery the symptoms manifest themselves again, and proceed, with frightful rapidity, to a fatal termination.

P A R T T H I R D .

DELIVERY IN GENERAL.

By delivery is meant the spontaneous expulsion or an artificial extraction of a viable fœtus and its annexæ through the maternal organs, and the return of these organs to their primitive condition.

Delivery has received different denominations. When it is achieved by the sole efforts of nature, and happily for both mother and child, it is called *natural*; but when it has been effected by the efforts of nature, without being also favourable to mother and child, it is called simply *spontaneous*. In a word, it is not natural when the object of nature is not fulfilled. It is called *difficult, artificial*, whenever it cannot be accomplished without the interference of art. It is also called *precocious* delivery, and delivery *at term*, according to the periods of pregnancy at which it occurs.

Precocious and Tardy Births.

In the human female, the duration of labour is ordinarily nine months, or *two hundred and seventy days*. However, this period is not so rigorous that fœtuses cannot be born before term, and be viable and strong, while others, having exceeded this period, are born weak and scarcely viable.

Two circumstances may determine precocious and tardy births

1st. The fœtus, although not having arrived at the full term, may, however, have acquired a development and perfection of organization which qualify it for external existence before the period fixed by nature, and then it is expelled before term.

It is easy to distinguish this expulsion from premature delivery resulting from any other cause, by the appreciation of the particular cause, by the strength of the fœtus, and by the perfection of its organs.

2d. The development of the fœtus may be incomplete, although at term, and then it is necessary that pregnancy be prolonged, in order that the fœtus may attain its degree of perfection.

These two phenomena are determined by that property which the uterus possesses, of acquiring, before the end of the ninth month, the conditions which enable it to contract, and expel a fœtus the development of which is premature, or of attaining these modifications only after the prescribed term, in order that the organization of the fœtus may become perfected. This fact is perfectly reasonable, and it is, moreover, proved by experiments made on animals. Do we not see, for example, in domestic animals, in which it is always easy to ascertain the time of impregnation, bring forth their young, strong and large, some days before term, and simply because the perfection of the fœtuses has occasioned their expulsion?

And, also, do we not see the young expelled after term, because they have not attained the degree of necessary development? In cows, for instance, which go nine months, the same as the human female, these variations are very striking: some calve thirty days before their time, others thirty days after.* Why should not the human species be subject to the same irregularities?

It will be in vain objected that these facts cannot be ascertained without great difficulty; analogy will suffice to admit them. They are, moreover, proved by numerous examples cited by authors, and, among others, by one mentioned by Desormeaux, of a lunatic who was not delivered until nine months and fifteen days after conception.

The law has also interfered in the settlement of this question; and it has declared that, after the three hundredth day, or tenth month, the legitimacy of the child may be contested by the husband.

TITLE I.

SPONTANEOUS DELIVERY AT TERM.

THE spontaneous expulsion of the fœtus is a very complex function, in which, theoretically, we should distinguish two orders of phenomena: 1st, the physiological phenomena, which are only the manifestation of the vital action of the uterus and organs concerned in parturition. Such are the precursory signs; the contraction and pain, the dilatation of the neck of the uterus, the muco-sanguineous discharge, the formation of the membranous sac, its rupture, &c. 2d, the mechanical phenomena of labour, and the ensemble of the laws which govern in the spontaneous expulsion of the fœtus.

CHAPTER I.

CAUSES OF LABOUR.

THE causes of labour have been distinguished into the determinate and efficient.

ART. I.—DETERMINATE CAUSES.

Most authors have generally agreed to place the determinate causes of labour in the uterus, but all do not explain this phenome-

* For some articles on this subject, see *Velpeau*, second edition, Paris, 1835, t. i., p. 362.

non in the same manner. According to some, the uterus commences its action after it has undergone all the modifications necessary for it to experience at the full period of gestation. This explanation, insufficient as it may appear, is still the most reasonable. According to others, it is the excessive distension of the uterus which forces it to contract upon the fœtus. The opinion of M. Desormeaux seems to be that adopted by most modern accoucheurs. "The fundus and body of the uterus," he observes, "are the first to become distended, in order to form the cavity destined to contain the fœtus. The cavity of the cervix does not participate until a later period in the increase of the uterus, and the resistance which its orifice opposes to the escape of the ovum diminishes in proportion as pregnancy advances to its termination. At this period, the fibres of the cervix no longer possessing resistance sufficient to prevent an antagonistic effect to the action of the fibres of the fundus, these last contract, and the fœtus is expelled." M. P. Dubois has adopted, in his lectures, the theory proposed by Jones Sower in 1819. I will transcribe it as I find it in my notes :

The uterus, at the completion of pregnancy, may be compared to most of the hollow and muscular organs, the rectum and bladder. It is composed, like these organs, of two planes of muscular fibres, the most external of which are longitudinal, the most internal, circular. Like them, it presents a contractile cavity, and a sphincter or orifice, with circular fibres. Like them, too, the uterus receives two orders of nerves ; the one, coming from the ganglionic system, distributes itself upon the body ; the other, coming from the system of animal life, go to the cervix of the organ.

Besides, there exist between the cervix and body of the uterus the same sympathies as between the rectum and sphincter, between the bladder and its neck ; and, just as the mechanical irritation produced on the sphincter by the presence of fœcal matter determines the contraction of the intestine, so, also, when at the end of pregnancy, there remains at the inferior portion of the uterus merely a ring composed of the circular fibres of the external orifice, this ring or sphincter, which, receiving nerves of animal life, is endowed with great sensibility, becomes irritated by the contact of the membranes and fœtus to which it had not been accustomed, and reacts sympathetically on the fibres of the fundus, which contract. I do not insist upon these various causes ; for none of the theories advanced is entirely satisfactory, and we are compelled to return, with M. Velpeau, to the opinion of Avicenna : "At the proper time, delivery takes place by the grace of God."

ART. II.—EFFICIENT CAUSES.

Hippocrates, and some ancient accoucheurs, and, indeed, some moderns too, such as Harvey, regard the fœtus as the principal agent of its expulsion ; and this opinion they founded on the following facts : that delivery is more protracted and painful when the fœtus has ceased to live ; that fœtusês have been expelled after the

death of their mother ; and, finally, that the young of some of the larger animals execute movements proper to facilitate their expulsion. It is true, that, after the death of the fœtus, the expulsion is more slow ; but this is not because the dead fœtus cannot aid in its expulsion, but simply because the fœtus, sunk upon itself, does not present to the uterus a point of support, and no longer stimulates it by its active movements ; and because then the uterus loses its vitality, its walls fall into a state of atony, and its organic contractility is deprived of its ordinary energy. These circumstances, which, it is true, depend upon the death of the fœtus, will suffice to explain the delay in the delivery when the fœtus has ceased to exist, without our having any right to attribute this protraction to the simple fact that the fœtus is not alive. In order to prove that the fœtus co-operates in its expulsion, authors have cited the example of children being born spontaneously after the death of the mother ; but in most of these instances the fœtus had died before its parent ; and, moreover, it is well known that a dead fœtus may be expelled in virtue of the tonicity of the uterus.

Bichat has demonstrated that all the organs do not die at the same time, and that the uterus may expel the fœtus by the force of its contractions some moments after the last pulsation of the heart.

Leroux has felt this organ contract fifteen minutes after the last breath. Osiander, having performed the Cæsarean operation on a cadaver, saw the uterus contract as in the living subject.

As to the movements executed by the young of some of the larger animals at the time of their expulsion, they cannot be doubted. And if it be reasonable to admit that the fœtus is not the principal agent of its expulsion, the opinion of those who think from analogy that it may contribute directly to it, at least to a certain extent, does not appear entirely void of foundation.

But what is this efficient cause ? Evidently it is found in the contraction of the uterine walls, aided by that of the diaphragm and abdominal muscles. However, the contraction of the uterus alone will suffice, in many cases, to effect delivery. In fact, expulsion occurs in females where the abdominal parietes are open, and also in those where these parietes are paralyzed. But if, most generally, the uterus will suffice at the commencement of labour, it is not always so after the head has passed the superior strait, and rests on the floor of the pelvis. The simultaneous action of the diaphragm and abdominal muscles is frequently indispensable to assist the uterus, and terminate the expulsion. However, the diaphragm is not, like the abdominal muscles, a direct agent of parturition ; it does not exert any compression upon the uterus ; but, sustained by the air inspired by the lungs, it gives to the base of the chest an immobility, which affords a point of firm support to the muscles, and it thus indirectly aids the uterus in its contractions.

CHAPTER II.

PHYSIOLOGICAL PHENOMENA OF DELIVERY.

ART. I.—PRECURSORY SIGNS OF DELIVERY.

WHEN pregnancy is near the completion of its term, a few days in advance delivery is announced by a train of symptoms called the precursory signs. Thus, the uterus descends and becomes prominent; the sides of the abdomen are more hollow; respiration and digestion become more easy. It is said that, at this period, the woman becomes more active and gay; but it is not so with all, for I have frequently observed the contrary. In a word, she is disturbed by want of sleep, and experiences a general malaise; she very frequently has an aversion for all active exercise. The lips of the vulva relax and become painful. The situation of the head at the superior strait causes the compression of the neck of the bladder and rectum, and the woman experiences frequent desire to pass her urine and fæces, and a sensation of cramp in her thighs. These latter symptoms, occasioned by the pressure excited by the fœtus on the maternal organs, do not, in general, exist when any other portion than the head presents, for the vertex alone can by its form descend sufficiently in the excavation, pushing before it the inferior segment of the undilated uterus, while such is not the case with the other portions of the fœtus. Thus these symptoms, besides announcing that delivery is at hand, will enable us to predict that the vertex presents.

Walking and standing also become more difficult, either in consequence of the preceding causes, or because of a slight softening of the symphyses. Œdema, and enlargement of the veins of the lower extremities and parts of generation, do not often appear before this period, or increase if they have previously existed. It is the same with regard to hemorrhoidal tumours.

Finally, the uterus, as if to prelude an important act which it is about to accomplish, contracts almost insensibly, and these successive contractions are painful to the mother; primiparæ are more subject to them than others. They feel their abdomen becoming hard, and if the uterine orifice is open, the touch will enable the accoucheur to recognise the distension of the membranes.

After these first symptoms labour commences, which Desormeaux has divided into three principal periods: the first comprehends all the phenomena observed from the commencement of labour to the complete dilatation; the second embraces the period from the dilatation to the expulsion of the fœtus; and the third comprehends the delivery of the placenta.

ART. II.—FIRST PERIOD OF LABOUR.

Labour is composed of a succession of phenomena, which are varied by a multitude of circumstances.

Thus, it presents differences in primiparæ and in women who have already borne children ; it is also influenced by the physical and moral energy, and by the physiological and pathological condition of the woman. Notwithstanding these varieties, the rapid sketch which I am about to make will represent, with all possible precision, the different phases of labour in a primipara.

At the commencement of labour, the patient experiences a kind of interior constriction, which troubles her, and which she has difficulty to express ; her whole body trembles ; the respiration is oppressed ; the pulse becomes slower, and all the vital forces seem to concentrate on the organ destined to accomplish the great act of the birth of man : thus the stomach ceases its functions ; nausea, and sometimes excessive thirst, occur ; the face becomes pale, and the skin is covered with a viscid perspiration. The patient experiences a feeling of lassitude ; frequently she is tormented with distressing presentiments ; she weeps, becomes agitated, or remains immovable. During this time, other phenomena present themselves. To the slightest pain which she has thus far experienced, now succeed uterine contractions of a more marked character. The cervix begins to dilate, and there is a muco-sanguineous discharge ; during the contraction, through the borders of the orifice are felt the membranes, which advance under the form of a spherical sac, the dimensions of which increase with the dilatation, and its form varies according to different circumstances, which I will mention hereafter ; the pains become more and more active, and the interval between them is much shorter ; the patient is irritable, and difficult to govern. Sometimes a chill, with chattering of the teeth, precedes the pain ; the pulse is accelerated ; the mouth and tongue are dry ; the teeth and lips become sooty ; vomiting takes place ; the mind wanders, and the woman appears delirious. During the interval between the contractions, the orifice is supple, thick, and rounded ; the membranes do not protrude, but are applied immediately upon the part of the fœtus which presents. Each pain brings on the same series of phenomena, until, the dilatation of the cervix being complete, the uterine cavity and vagina form but one uninterrupted canal. Thus terminates the first stage of labour, the most fatiguing and protracted, but, at the same time, the least dangerous and difficult.

ART. III.—SECOND PERIOD OF LABOUR.

At this epoch the woman begins to feel conscious of the important act that is about taking place. The muscles of the abdomen extend assistance to the uterus ; the woman increases her efforts ; the respiration is hurried and panting ; the skin is covered with perspiration ; the pulse becomes quicker and more full. Each contraction is followed by an interval of calm sufficiently marked, du-

ring which the woman, overcome by a desire to repose, falls asleep, but is soon awakened by a recurrence of the pains. Under the influence of these successive contractions, the bag of waters protrudes more and more, and, too feeble to sustain the pressure it experiences, it bursts. The liquor amnii now escapes in more or less quantity, and immediately the portion of the fœtus which presents closes up the orifice, especially if it be the head. There now succeeds a calm of short duration, and the uterus seems to repose only to acquire new energy. Soon the contractions recommence with a power and force which they had not previously exhibited; the fœtus passes the orifice, and penetrates the vagina, which dilates by degrees in order to receive it, and it soon reaches the floor of the pelvis. During this time, the compression of the crural nerves and some nervous twigs, which pass through the thyroid foramen, occasions cramps and a dragging sensation at the anterior and internal portion of the thighs.

The pains become more and more violent; the woman seizes hold of anything that is near her; she throws herself backward, fixes her feet against the point of support which has been provided for her, takes a deep inspiration, and, drawing in her lips, throws all the muscles of her body into contraction. Much more frequently, however, the cries she utters in consequence of the intensity of the pain nullify a portion of the effect, by the movements of inspiration and expiration which they determine.

The head at each contraction, resting on the perineum, begins to press forward; at each pain the floor of the pelvis projects more and more; the anus becomes prominent, and opens; the vulva also opens, the labia minora separate, and the hair of the child's head is brought to view; the labia majora become effaced; the integuments on the superior portion of the thighs also contribute to the enlargement of the vulva, which, forced forward by the head, forms a circular ring, thin especially at its inferior commissure, which appears ready to burst. This latter accident would certainly take place if the contraction did not immediately cease; the head then retires within the excavation; the perineum returns upon itself; the vulva closes, but the woman experiences constantly a feeling of tenesmus in the bladder and rectum, which torments her with an incessant desire to void her urine and fæces, and causes her to bear down; also, although she does not experience pain, yet she frequently makes an effort to expel the child; finally, after a succession of contractions and intervals of calm necessary to habituate the maternal organs to the excessive dilatation they experience, the head, which advances gradually at each contraction, and retires a little during the moment of calm, is pushed forward by a strong expulsive pain, which draws a shriek from the woman, and passes the tuberosities of the ischium; but it is arrested for some time by the soft parts, and finally clears them. Ordinarily the trunk follows the head immediately; sometimes, however, it is not expelled for some seconds afterward.

ART. IV.—DURATION OF LABOUR.

The duration of labour is extremely variable, depending upon climate, the degree of civilization, and constitution of the woman; it is more protracted in a primipara, on account of the resistance of the perineum; but the progress of age does not exert on its duration the detrimental influence supposed by most accoucheurs, even in a primipara.

In a word, the numerous observations made by travellers, and the experience of every day, prove, in the first place, that the facility of childbirth is in an inverse ratio to the state of civilization; and, secondly, that the mean duration of labour in our climate is from eight to ten hours.

The numerous circumstances capable of varying the epoch of delivery may be easily appreciated; we may predict the probable duration of labour by the degree of dilatation and suppleness of the cervix, its hardness and resistance; by the frequency, intensity, and prolonged character of the pains; by the greater or less resistance of the perineum and vulva. But, whatever may be his skill, the accoucheur should never attempt to state exactly the time at which delivery will take place, for fear of exposing himself to error. In a word, there is nothing certain as to the progress of the dilatation, nor is there any regularity in the succession of the contractions; and I have frequently known labours, which experienced persons have supposed near their termination, become prolonged far beyond the period they had imagined.

ART. V.—PHYSIOLOGICAL PHENOMENA OF LABOUR.

The physiological phenomena of labour, of which I have just presented a condensed description, do not always proceed with regularity; numerous exceptions might be noted, especially as regards the principal of these phenomena, such as uterine contraction or pain, dilatation of the cervix, muco-sanguineous discharge, and the formation and rupture of the membranous sac.

§ 1. *Pain or Contraction.*

In obstetric language, we employ as synonymous the words pain and contraction, because, in most women, the pain is caused by the contraction, and is inseparable from it. However, every contraction is not productive of pain; and we must not confound cause and effect; for we see some women bring forth their children almost without pain, and yet, as there was expulsion, there must have been uterine contraction. Among other examples, I may mention that of a young primipara, aged sixteen years, whose vagina was separated by a partition pierced by a small opening, and of which M. Dubois requested me to make a drawing, in order that the student might have a precise idea of it. (See article *Dystocia, Deformities of the Vagina.*) She was awakened by slight pains at four o'clock in the morning, and was delivered alone at six, without demanding any assistance.

As the contraction does not always occasion pain, so, in like manner, the vivacity of the pain does not always enable us to measure the force of the contraction; for some women, very sensitive, complain of great pain when the contractions are quite moderate.

A. Character of the Contractions.—The pains commence in the lumbar region, encircle the pelvis, and terminate sometimes in front, and sometimes on the fundament, occasioning a desire to pass the fæces. They are accompanied by a hardening and prominence of the abdomen; if the finger, as has already been observed, be applied to the orifice, it will be found dilated, and the membranes protrude. The uterine souffle becomes suspended, but the pulsations of the heart preserve their integrity.

Sometimes these pains are only felt in the lumbar and sacral regions; the *pains in the loins*, to use the common expression, are much more distressing than the others, and have a less marked influence on the labour. It is impossible to state the particular period during which they occur; I have observed them at all the periods; but it is certain that they depend on the great sensibility of the orifice, which receives nerves only of animal life, through the lumbar and hypogastric plexuses.

The pains have received different names, according to the period of labour to which they appertain.

The first, those which accompany the precursory phenomena of labour, are called *cutting* pains; they are marked by a distinct interval of labour, and, in general, possess but little interest.

The second, stronger and nearer together, and which are not separated by a complete calm, are called *preparative*, because they determine the dilatation of the orifice. Finally, they soon take the name of *expulsive*, and just at the termination of labour they are called *conquassant*.

B. Seat of the Pain.—Some authors contend that the seat of the pain is exclusively in the neck of the uterus, because this portion is supplied with nerves from the system of animal life. Others suppose that the body of the uterus is also capable of transmitting to the nervous centre the pain which results from its contraction. M. P. Dubois has united these two opinions, and admits that the pain is produced by the contraction of the whole organ, adding, however, that at the commencement of labour the dilatation of the neck is the principal cause of this pain; that later, it appears to be specially due to the compression of the body; and that, at the last moment of expulsion, the compression of the vagina, the excessive dilatation of the vulva and perineum, give to these pains a peculiar character, which the preceding ones did not possess.

The calm or relaxation which is observed between each contraction is the result of that law which is found to govern the organism, in virtue of which a contraction is not permanent, and is interrupted by fatigue, in order that it may be followed by an interval of calm, which permits it to preserve its activity.

§ 2. *Dilatation of the Orifice.*

The phenomena of dilatation are not the same in primiparæ and in women who have already had children. In primiparæ, the internal orifice is closed, thin, and sharp, and requires more or less time for it to acquire the degree of dilatation present in a woman who has borne children, and in whom, before labour commences, the orifice is already open. Then, from this moment, in both, the dilatation is gradual; slow until it equals in extent a two-shilling piece, it then proceeds much more rapidly, and particularly at the expense of the anterior lip, which thickens and forms a pad, which is felt between the head of the fœtus and the lower portion of the symphysis pubis. The state of relaxation or rigidity of the neck, the presenting portion of the fœtus, the period of labour at which the membranous sac ruptures, will all have an influence on the progress of dilatation. In fine, irregularity in the uterine contractions, or the pathological contractions, as M. P. Dubois calls them, and of which I shall speak more in detail hereafter, may, much more than the obliquities of the uterus, prolong this dilatation.

It is easily understood how the rigidity or relaxation of the orifice may influence the dilatation, and why the dilatation will take place more rapidly in a presentation of the vertex, which, by its form, engages easily in the orifice, than in a presentation of the shoulder, when the part remains a long time high up, and does not press upon the orifice until a later period. So, also, if the membranous sac be prematurely ruptured, its aid in dilating the orifice will be lost. The causes, therefore, of dilatation of the neck of the womb are uterine contraction, descent of the membranous sac, and the presenting portion of the fœtus.

§ 3. *Muco-sanguineous Discharge.*

The mucous discharge is a secretion from the womb and vagina, which takes place at the time of labour, and sometimes before; it is mixed with blood proceeding from the slight laceration of the orifice during its dilatation, and particularly from the rupture of the small vessels which, passing from the internal surface of the uterus, distribute themselves on the membranes; and, finally, from the separation of a small portion of the placenta.

§ 4. *Membranous Sac.*

In proportion as the cavity of the uterus becomes smaller in consequence of the contractions, the amniotic fluid, in gaining the point of the uterus offering the least resistance, that is to say, the neck, pushes before it the membranes, and in proportion as the orifice dilates, the membranes protrude so as to constitute the bag of waters; and, as the cavity of the ovum is not distended by the liquor amnii, a portion of this fluid may pass from it in consequence of the contraction of the uterus. And it is not necessary, in order to explain this phenomenon, to admit the extensibility of the membranes, or the transudation of the liquid from the cavity of the

ovum. The form of this bag undergoes no appreciable change in configuration so far as the orifice is concerned, but it varies according to the portion of the fœtus which presents.

(Fig. 82.)



Thus, in the presentation of the vertex, it is flat; the membranes are almost applied to the head of the fœtus, and between them and the head there is but a small quantity of fluid.

(Fig. 83.)



In the presentation of the face and of the pelvic extremity (hg. 83), the sac becomes elongated, and contains much more liquid.

Division of the Ovum.—When the dilatation is complete, and often even when the neck measures only eighteen to twenty lines in diameter, the membranous sac is ruptured under the influence of an energetic contraction, sometimes with a sound, sometimes without any apparent indication.

A. Premature Rupture.—The rupture of the sac may be premature; it may take place before any uterine contractions have been perceived, or during the first sensible contractions, and it is generally supposed that this occurrence is followed by serious consequences in all cases. I am of opinion that authors have exaggerated the unfavourable influence of this accident upon labour; it is true, however, that in presentations which do not completely close up the orifice, the escape of too much liquor amnii will render the labour more long and difficult, and especially dangerous for the child, since it ceases to be protected during the contractions by a layer of fluid interposed between it and the uterus. But in presentations of the vertex, this unfavourable influence is scarcely felt in the majority of cases; I will go farther, and remark, that frequently this premature rupture permits the uterus, when it is too much distended, to return upon itself, and thus favours the contractions.

B. Tardy Rupture.—The density of the membranes, and the

presence of the head of the fœtus, which sometimes opposes the impulsion of the fluid, will cause a delay in the rupture of the sac.

C. *Rupture above the Orifice.*—The rupture of the sac above the orifice is favourable to the retention of the fluid. It occasionally happens in this case, that a portion of the sac ruptured above the orifice, and separated from the internal surface of the uterus, accompanies the fœtus in its expulsion, and covers its head; it is then said that the child is born with a *caul*; but it is difficult to imagine that the child could be thus expelled without previous rupture of the sac. This can only happen when the fœtus has not attained the full term of its development. In similar circumstances, I have sometimes seen the sac pushed forward by the head of the child even into the vagina, the ovum having remained thus far intact; but at this period the sac became ruptured. It will be readily conceived that this propulsion of the membranes may determine serious results, such as the premature separation of the placenta, hemorrhage and its consequences.

D. *The Point at which the Sac is ruptured.*—The rupture of the sac may take place in the centre, or in some point remote from the orifice. In this latter case, after the escape of a small quantity of fluid, the head closes up the orifice, and the inferior portion of the sac fills again with liquid, and forms what is termed a supernumerary bag: this is of rather common occurrence.

E. *Escape of the Fluid.*—As soon as the sac is ruptured, all the liquid it contains escapes; but the head of the child then closes the orifice, and prevents, for the time, the flow of the remaining portion of the liquor amnii. Soon, however, new contractions succeed, and then the head, slightly raised up by the fluid, allows a small quantity to escape, and this occurs at each pain, as long as the head has not passed the orifice.

In the flat sac, the quantity of fluid that escapes is small, and the uterus thus not being permitted readily to return upon itself, the labour is somewhat retarded. In this case, it will suffice to raise gently the head of the fœtus, which will allow an additional quantity of fluid to pass out, and the contractions will then become more effective. In the other variety of sac, the liquid escapes in great abundance and constantly, especially if the shoulder or feet present. The flow is less when there is a complete pelvic presentation.

ART. VI.—PRESENTATIONS AND POSITIONS OF THE FŒTUS.

The fœtus is expelled in virtue of certain laws, which vary according to the presentations and positions it affects at the superior strait. The presentation is the presence of some particular part of the fœtus at the upper strait; the position is the relation which the part bears to the different points of the strait.

Before the time of Solayres, practitioners never attempted to do more than ascertain the presentations; it was he, and his pupil Baudelocque, who first classified the positions. But they suffered themselves to exaggerate a good principle. Thus, Baudelocque.

predicating on the fact that all parts of the fœtus could be felt at the uterine orifice, admitted twenty-two presentations; on the same principle, and supposing that each presentation might be in relation with the various points of the upper strait, he admitted seventy-four positions. However, notwithstanding this great number of presentations and positions, he has not been true to his principle in admitting only twenty-two presentations and seventy-four positions; for on the fœtus we may distinguish more than twenty-two principal points, and around the superior strait there are a thousand points with which each presentation may be in relation: he therefore felt the necessity of limiting himself to a certain number of presentations and positions; but this limit has not been as complete as it might have been.

Authors soon discovered that these subdivisions were useless in practice, and, moreover, difficult to be remembered by the pupil; they therefore endeavoured to simplify this classification.

Madame Lachapelle, MM. Nægele, Stoltz, A. Dubois, and P. Dubois, have successively improved this important part of the obstetric art, and have thus rendered a signal service to the science, and especially to the students. I shall not contrast the ancient classifications and those which followed them, but shall content myself simply with stating that proposed by M. P. Dubois, for it embraces all the successive improvements introduced since the time of Baudelocque.

§ 1. *Presentations.*

The principle with which Baudelocque started, that all the parts of the fœtus at term can be felt at the orifice of the uterus, if it can be admitted theoretically, will not, certainly, be recognised in practice; for certain portions of the fœtal surface have never presented directly in a fœtus at the full period. Madame Lachapelle, in forty thousand cases, never met with them. Such are the portions of the dorsal region, from the first dorsal vertebra to the last lumbar; so, also, the anterior region, from the neck to the umbilicus, and the lateral regions of the neck. Hence the necessity of admitting in the classification those regions of the fœtus which alone may occupy the superior strait. Again, certain presentations, even among those which exist from the commencement of labour, soon disappear to give place to others, which continue during the whole delivery. M. P. Dubois, therefore, has admitted real presentations and their varieties.

For this purpose he has divided the fœtus into three principal regions, which may present at the upper strait, the cephalic extremity, the pelvic extremity, and trunk.

But the head may present flexed or extended; it is, therefore, necessary to distinguish a presentation of the vertex and a presentation of the face.

The vertex does not always present directly; it may be somewhat inclined: a parietal protuberance, or even a portion near the

ear, may occupy the superior strait. *Variety of Parietal Presentation*, two in number.

The vertex may be very much flexed, *occipital variety*; it may not be flexed, *frontal variety*.

There are, therefore, one full presentation of the vertex, and four varieties of presentation.

It is the same with the face, which has a *frontal variety* when the os frontis presents; two *malar varieties* when one or other cheek occupies the strait; a *mento-cervical variety* when the chin and a small portion of the neck present.

When the pelvic extremity presents, the legs are habitually flexed on the thighs, and the thighs on the abdomen; but these parts may be separated: thus the thighs, the feet, or the knees may present alone. But as these various circumstances cause no change in the expulsion, they should not be considered distinct presentations, but merely different modes of one and the same presentation; and we admit, then, but one presentation for the pelvic extremity.

Moreover, the pelvic extremity, whether it presents entire or not, does not always occupy the strait directly. It may, like the vertex and face, be inclined in four different directions: two *iliac varieties*, when one or other hip presents; a *sacral variety*, when the sacrum presents; an *anterior variety*, when the pelvic extremity presents by the front of the tibias, if it be complete, or by the posterior portion of the thighs, if the breech alone descends.

It must be remembered that these varieties of presentation cannot be recognised except in the complete presentation and in those of the breech; the knees and feet being much too movable to allow the accoucheur, by their direction, to appreciate the inclinations of the fœtus.

Madame Lachapelle had long since remarked that, in presentations of the trunk, the sides only of the trunk occupied the superior strait; and, after her example, M. P. Dubois has divided the trunk into two lateral halves, which will give the two presentations; one for the right lateral region, the other for the left lateral region. In the full presentation, the shoulders and acromion occupy the centre of the superior strait; but these presentations may be like the others, full or irregular. Thus, a small portion of the back may be felt at the orifice at the same time with the shoulders, *dorsal variety*; a small portion of the chest, *sternal variety*; a small portion of the inferior part of the neck, *cervical variety*; the portion of the side on which rests the elbow of the fœtus, *cubital variety*; and irregular presentations, which, like corresponding ones of the vertex, are included in the presentation of the right and left shoulders.

In a word, M. P. Dubois has admitted five full presentations, and four varieties of presentations for each full one. But he has not arranged these last in the same class with the full presentations: 1st. Because they only exist at the commencement of labour; 2d. Because they do not in any respect modify the mechanism of spontaneous delivery; 3d. Because they scarcely alter the principal

manipulations. But we must not forget them in practice, because they are sometimes felt at the orifice, and because, in certain cases, rare it is true, they render it necessary for the accoucheur to interfere, in consequence of their not changing to the full presentation.

The mechanism of labour will make this better understood.

Positions.

The older accoucheurs, as I have already remarked, predicating on the fact that the presentations may be in relation with all the points at the upper strait, admitted a great number of positions, in each of which the mechanism of delivery varied.

M. Nægele and M. P. Dubois, on the ground that delivery is accomplished according to the same laws, in the majority of cases, whatever may be the position, have divided the pelvis into two lateral halves, and have admitted for each presentation only two positions, a left and a right. But as the parts which serve as the indicating point in the presentation, the occiput, for example, in the vertex, may correspond with all the points of these two halves, we add to this definition of *left* or *right occipito-iliac position*, the words *anterior*, *transverse*, or *posterior*, as the occiput is *in front*, *transversely*, or *posteriorly*. These varieties of position have only a secondary influence in practice, since the delivery, as will be seen, is the same in each presentation, no matter what the position. But it is well to remember them, for they serve to explain certain rare anomalies in the movements of the head during its passage through the pelvic canal, and their exact knowledge guides the accoucheur in cases in which it becomes necessary to interfere.

MM. Nægele and P. Dubois have also admitted for the face two positions, right *mento-iliac* and left *mento-iliac*. The chin at the right or left, always with the same varieties of anterior, transverse, or posterior. There are likewise two positions for the pelvic extremity, the left *sacro-iliac* and right *sacro-iliac*, anterior, transverse, or posterior.

Two positions for the left lateral region of the trunk or left shoulder, *left cephalo-iliac*, *right cephalo-iliac*. The head is to the left or to the right. And two for the right lateral region, *left cephalo-iliac*, *right cephalo-iliac*, accordingly as the head is to the left or to the right. But we do not meet, in these presentations of the trunk, with the same varieties of position; their situation is almost always transverse.

All these presentations and positions are not equally frequent, nor equally favourable to the mother and child. In the first three spontaneous termination is usual; in the presentations of the trunk, on the contrary, this spontaneous termination is of rare occurrence. I have taken nearly all I have said with regard to the classification from the learned lectures of M. P. Dubois. I am indebted to him, also, for the elements of the following synopsis:

CLASSIFICATION OF THE PRESENTATIONS AND POSITIONS OF THE FŒTUS.

		VARIETIES.		POSITIONS.		
The <i>fœtus</i> may present at the mouth of the uterus by its head, pelvic extremity, or trunk.	Presentation of the pelvic extremity, whether composed of all its elements, or whether separate.	That is, whether the extremity presents completely, composed of the breech, knees, and feet.	The complete presentation and the presentation of the breech alone admit varieties of the full presentation, the two other presentations being too movable for us to recognise their inclinations or varieties.	1. 2. Iliac.	Two positions: { left sacro-iliac; { anterior. right sacro-iliac; { transverse. posterior.	
				1. 1. Sacral.		Two positions: { left cephalo-iliac; { usually right cephalo-iliac; { transverse.
				1. 1. Anterior.		
Presentation of the head, subdivided into	Full presentation of the vertex,	Full presentation of the face,	also embracing varieties of the full presentation.	1. 2. Malar.	Two positions: { right mento-iliac, most frequently left mento-iliac, most frequently anterior.	
				1. 1. Mento-cervical.		
Presentation of the trunk.	The trunk of the fetus is divided into two lateral halves, and each of these may present.	Presentation of the right lateral region,	embracing varieties.	1. 1. Cervical.	Two positions: { left occipito-iliac; { anterior. right occipito-iliac; { transverse.	
				1. 1. Dorsal.		
Presentation of the left lateral region.	embracing varieties.	Presentation of the left lateral region.	embracing varieties.	1. 1. Cervical.	Two positions: { left cephalo-iliac; { usually right cephalo-iliac; { transverse.	
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Presentation of the left lateral region.	embracing varieties.	Presentation of the left lateral region.	embracing varieties.	1. 1. Cervical.	Two positions: { left cephalo-iliac; { usually right cephalo-iliac; { transverse.	
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				1. 1. Dorsal.		
Presentation of the left lateral region.	embracing varieties.	Presentation of the left lateral region.	embracing varieties.	1. 1. Cervical.	Two positions: { left cephalo-iliac; { usually right cephalo-iliac; { transverse.	
				1. 1. Dorsal.		
Presentation of the left lateral region.	embracing varieties.	Presentation of the left				

TITLE II.

PRESENTATION OF THE VERTEX, OR OF THE HEAD FLEXED.

THE presentation of the vertex is much more frequent than all the other presentations combined.* Thus, M. P. Dubois had nineteen hundred and thirteen presentations of the vertex in two thousand and twenty cases of delivery. (For the cause of this frequency, see *Attitude of the Fœtus at Term*). Moreover, he has shown that, in these nineteen hundred and thirteen presentations of the vertex, the occiput was found on the left thirteen hundred and seventy-seven times, thirteen hundred and fifty-five times in front (left *occipito-iliac*, or left anterior or cotyloid position), and twelve times posteriorly (left posterior occipito-iliac, or left sacro-symphysien). Finally, in these nineteen hundred and thirteen presentations of the vertex, he has found five hundred and forty-six right occipito-iliac positions, in four hundred and ninety-one of which the occiput corresponded with the right sacro-iliac symphysis, and in fifty-five only was the occiput turned forward behind the right cotyloid cavity.

M. Nægele, in one hundred presentations of the vertex, found the occiput seventy times to the left and in front, and thirty times posteriorly and to the right. These results are in every respect conformable to those obtained by M. P. Dubois, and the opinion now generally admitted is, that the head, when it presents, assumes in preference the diagonal position, the occiput in front and to the left, or posteriorly and to the right; that the right anterior occipito-iliac, and left posterior occipito-iliac, that is to say, the two opposite positions of the other diagonal, are very rare, and particularly the left position, which is itself much less frequent than the transverse positions; at least such is the case if my own observations and those of Madame Lachapelle be correct.†

* To afford the pupil some idea of the relative frequency of vertex presentations, I subjoin precise calculations made on this subject by Madame Lachapelle. Of 15,652 children born during a period of nine years, 14,677 presented the vertex, 349 the breech, 235 the feet, 72 the face, 68 one or other shoulder, and 2 the knees. It will thus be seen that the presentations of the vertex formed nearly 15-16ths of the whole.—ED.

† There must be some error here. If Dr. Chaillly makes a faithful record of the observations of Nægele and M. P. Dubois in reference to the relative frequency of occiput presentations at the left anterior and right posterior points of the pelvis, these gentlemen must have laboured under some miscalculation; for their tables are not only at variance with those of the most accurate of their predecessors, but they will, I think, be found to differ widely from Nature herself. For example, Nægele, it is said, in 100 presentations of the vertex, found the occiput directed to the left and in front 70 times, and to the right and posteriorly 30 times. According to Dr. Chaillly, in 1913 presentations of the vertex, M. P. Dubois has found the occiput situated at the left and in front 1377 times, and 491 times to the right and posteriorly. And Dr. Chaillly, moreover, adds, that the opinion now generally admitted is, that the head, when it presents, has the occiput either in front and to the left, or posteriorly and to the right. This statement is undoubtedly erroneous: so far from being the admitted opinion, it will be seen that, in the presentations of the vertex at the superior strait, the occiput will be found at the left and in front of the pelvis some seven to eight times more frequently than at the right and anterior portion; and that these anterior and lateral positions of the oc

Why is the head found more frequently in the left diagonal, the occiput to the left and in front, or to the right and posteriorly? The situation of the rectum, and its repletion during the latter periods of pregnancy, appear to be the cause of this preference. The right diagonal diameter is diminished by the development of the rectum, and the head finds itself forced to seek the diameter which presents the greatest space for its descent, and, in this case, it is the left diagonal diameter.

Finally, it appears to me impossible to say to what causes is to be attributed the great frequency of the anterior left occipito-iliac position; and I cannot admit that it depends on the same circumstances as those which authors have regarded as determining the presentation of the vertex, namely, the weight of the back of the fœtus; for this weight would act much more frequently on the right

occiput occur from 80 to 100 times more frequently than the posterior and lateral. I cannot account for this discrepancy between the calculations of Dubois and Nægele, and those of Madame Lachapelle and Baudelocque, to say nothing of numerous other observers; and I wish especially to direct the attention of the student to the fact of this error, as laid down by Dr. Chailly, because it involves a most important practical direction, to which allusion shall be made presently. Madame Lachapelle gives the following table as the result of her experience in the Maternité at Paris: In 15,652 cases, 11,634 presented the occiput in front and to the left of the pelvis; 2853 presented the occiput in front and to the right; 112 *posteriorly and to the right*, and 78 *posteriorly and to the left*. In not one of these instances was there a complete transverse position of the head. Now, what is the experience of Baudelocque on this subject, a man whose opportunities for accurate observation were most ample? In 10,322 cases, the occiput was to the left and anterior portion of the pelvis 8522 times; to the right and anterior portion, 1754 times; to the right and posterior portion, 25 times; to the left and posterior portion, 19 times. I might present the pupil with other tables, made under circumstances to forbid error, all showing the same result; but it can scarcely be necessary. I must repeat, I cannot account for the statement of M. P. Dubois, usually so accurate and just in his opinions.

Indeed, if his statements were to pass without notice, it might give rise to serious consequences both to mother and child. For example, the depth of the anterior wall of the pelvis, consisting of the length of the symphysis pubis, is about one third the length of the posterior wall, consisting of the length of the sacrum and coccyx. Now, when the occiput is situated at either the left or right acetabulum, the head, before being delivered, will have to traverse only one third the distance (the length of the anterior wall) that it will be required to do when situated at either the left or right sacro-iliac symphysis, for then it must travel the whole length of the sacrum and coccyx. Therefore, all things being equal, when the occiput is at one of the anterior and lateral points of the pelvis, the labour will be two thirds shorter than when it is situated at one of the posterior and lateral points. Again, when the occiput is in one of these latter positions, it sometimes occurs that nature spontaneously brings it to one of the anterior and lateral points during the movement of rotation, and thus overcomes all difficulty; but this is not the course ordinarily pursued by nature in these posterior positions of the occiput (as Dr. Chailly alleges—see mechanism of natural delivery in the right posterior *occipito-iliac position*), but it constitutes an exception; and in these positions, the occiput, instead of being under the symphysis pubis, is found in the concavity of the sacrum. Nature, by the very fact that she sometimes spontaneously changes the posterior positions of the occiput to the anterior, clearly indicates what should be the course pursued by the accoucheur under these circumstances. He cannot have a more faithful guide than nature—she is full of wisdom and benevolence—always vigilant and prompt, when not circumvented by difficulty, in overcoming obstacles to the free and safe passage of the child. Now, the course I would seriously recommend to the pupil is this; it is the practice inculcated by Baudelocque, Capuron, &c., and I have availed myself of it with the best results: When he arrives at the bedside, and, in making a vaginal examination, ascertains that the occiput is at one of the posterior points of the pelvis, he should, as soon as the mouth of the womb is sufficiently dilated to permit the manipulation, introduce, with great gentleness and caution, his hand, and place his thumb on one of the lateral portions of the head and the fingers on the other, and slowly elevate the head, at the same time bringing the occiput to one of the anterior points of the pelvis, either the left or right acetabulum; for example, if the occiput be at the right sacro-iliac symphysis, it should be brought to the right acetabulum; if at the left sacro-iliac symphysis, to the left acetabulum. When this change has been effected, nature will usually be competent to accomplish the delivery, and the fœtus will not be exposed to the severe hazard of a protracted birth. Indeed, if this change be not made, it will often be necessary to resort to the forceps to terminate the delivery; and if the labour be submitted to nature, the child will frequently be sacrificed.—ED.

than on the left, the inclination of the uterus being much more marked on the right side, and I have just remarked that the right anterior occipito-iliac positions are rather rare. I will content myself with admitting the fact, without endeavouring to ascertain the cause, the nature and extent of this work not permitting me to pursue researches purely theoretical.

§ 1. *Diagnosis of the Presentation.*

At an advanced period of pregnancy, and before the neck of the uterus will allow the introduction of the finger, it is frequently possible to ascertain the presentation by the touch. The vertex, for example, adapting itself by its form to the superior strait, descends by pushing before it the inferior segment of the uterus; there is then felt through the anterior wall of this segment a regular, solid tumour, which is raised by means of the finger with the more difficulty as pregnancy is farther advanced (see *Diagnosis of Pregnancy, Eighth and Ninth Month*); and the sensation is perceived so usually in this presentation when the pelvis is well formed, and no other cause prevents the head from descending, that, when it is not perceived, we have reason to apprehend a presentation less favourable than that of the vertex: either the face, pelvic extremity, or trunk.

These parts, by their irregular forms, cannot, in fact, descend prematurely at the superior strait, and be felt there, as the vertex is. The accoucheur, in this case, should watch attentively the commencement of the labour, in order to remedy at once the accidents which may manifest themselves.

After the labour has fairly begun, the finger introduced into the orifice more or less dilated may very readily recognise this presentation; before the rupture of the membranes, there is felt at the superior strait a large, smooth, solid tumour, exhibiting an elastic, bony resistance, on which are observed membranous spaces of various forms, representing the sutures and fontanelles. After the rupture of the membranes, these characters are still more evident. Yet, most usually the sutures lose their membranous appearance in consequence of the overlapping of the bones of the skull, and present to the finger of the accoucheur the feeling of longitudinal prominences. This fact depends on the compression produced on the head in descending.

§ 2. *Diagnosis of the Position.*

In order to ascertain the position, it will be necessary to know the relation of the fontanelles with the different points at the superior strait. Before the rupture of the sac, it is sometimes possible to recognise the position, but often this cannot be done; for most frequently the diagnosis cannot be arrived at until after the rupture of the membranes. When this takes place, the accoucheur seeks with his finger for the sagittal suture, which traverses the superior strait diagonally from left to right, or from right to left. This suture terminates at the fontanelles; so that,

whether the finger passes forward or backward, it will reach one of the two fontanelles, according to the position. I will suppose that the finger touches in front and to the left, at the extremity of the sagittal suture, the posterior fontanelle, a slightly membranous and triangular space, formed by three prominent angles (the parietal angles and point of the occiput), and three other angles (the junction of the two branches of the lamdoidal suture, and the extremity of the sagittal suture); this will be the left anterior occipito-iliac position; but in order to be positive that we feel the posterior and not the anterior fontanelle, we must endeavour to reach the other fontanelle, which is behind and to the right. In order to do this, the finger is made again to pass along the sagittal suture posteriorly, and the anterior fontanelle will be felt—a quadrilateral membranous space, formed by four osseous angles, and the junction of four sutures; this, of course, will remove all doubt as to the nature of the position—the left anterior occipito-iliac. It can scarcely be necessary to add that, in the right posterior occipito-iliac position, the situation of the head is inverse; that the posterior fontanelle will be felt posteriorly, and to the right; and that, in following the same course, the occiput being taken as the starting-point, we shall be enabled to ascertain the other positions of the vertex.

§ 3. *Difficulty of Appreciation.*

When the vertex has been for some time exposed to the uterine effort at the superior strait, the scalp becomes the seat of a sero-sanguineous engorgement, which may be sufficiently marked to form a large sanguineous tumour, which may conceal the characters of the presentation, and much more frequently those of the position. The finger will feel, in this case, a tumour more or less soft, and more or less prominent, which, at first, might be supposed to be the breech, an error which has been committed more than once under these circumstances. But, in carrying the finger under the orifice, we should endeavour to reach a portion of the head, the bony resistance of which will make the diagnosis complete; we shall then recognise the presentation of the vertex. The position

(Fig. 84.)



is much more difficult to define in this case; the engorgement of the scalp sometimes entirely conceals the fontanelles. Happily, in this presentation, delivery being most generally spontaneous, no matter what the position, it will be sufficient to know that the vertex presents, and we can then commit the labour to nature.

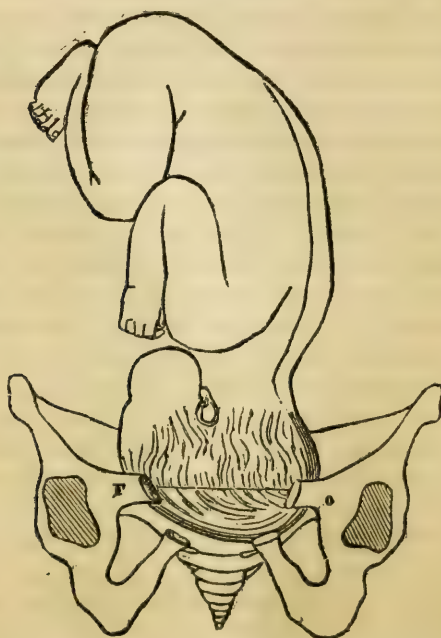
A defective ossification (I) in the length of the sagittal suture may be mistaken for a fontanelle, and lead to error as to the direction of the head, especially when it is possible to reach only one of the two real fontanelles. The advanced ossification of the fontanelles, and their disappearance in consequence of the overlapping of the bones at the time of the descent of the head, are also capable of misleading the accoucheur. It is proper, however, to add, that only the posterior fontanelle can lose its character by this overlapping of the bones or the advanced ossification; while the anterior, which is much larger, preserves almost always, at least in part, its peculiar marks.

ART. I.—MECHANISM OF SPONTANEOUS DELIVERY.

The mechanism of spontaneous delivery is precisely the same in all the positions of the vertex, whether the occiput looks to one of the points of the left lateral half, or of the right lateral half of the pelvis. A slight difference exists, however, between the anterior and posterior positions: in the posterior, the movement of rotation which brings the occiput under the pubes is more extended; and, moreover, these positions may sometimes, though very rarely, be

(Fig. 85.)

Before Flexion.



converted into the posterior positions.* This exception, however, does not prevent our stating, as a general rule, that natural delivery is effected according to the same laws, whatever may be the point at the superior strait with which the occiput is in contact.

Thus it will be sufficient to describe this mechanism in the left anterior occipito-iliac position, and in the right posterior occipito-iliac position.

§ 1. *Mechanism of Spontaneous Delivery in the Presentation of the Vertex, and in the Left Anterior Occipito-iliac Position: first Position.*—(See Fig. 85.)

Before the rupture of the membranes, the head is demi-flexed on the chest; the anterior parietal protuberance is more accessible to the finger of the accoucheur, and appears lower than the posterior, whether this depends on a lateral inclination of the head, determined by the ordinary ante-version of the organ, or on the inclination of the plane of the superior strait.

The two fontanelles are nearly on the same plane; however, the posterior is somewhat lower, and the finger reaches it more easily, particularly in this position, in which this fontanelle is situated in front of the pelvis.

The posterior fontanelle is situated in front and to the left; the occiput corresponding with the posterior portion of the cotyloid cavity, the anterior fontanelle being in relation with the right sacro-iliac symphysis. It results from this, that the occipito-frontal diameter (OF)† and the sagittal suture are parallel to the left oblique diameter, and the bi-parietal diameter is parallel to the right oblique diameter.‡ After the rupture of the membranes, commence the mechanical phenomena of the expulsion of the ovum, which have been divided into five principal periods, in order to facilitate their study. It must not, however, be supposed that these five periods are executed successively with the regularity with which I am about to describe them: often, two or three periods are combined; and, again, a third commences before the entire accomplishment of the two first, &c., &c.

A. *First Period, Flexion.*—After the rupture of the membranes, the uterine contractions are exerted on the fœtus, compress it, and cause it to descend into the superior strait; but the head, which presents by a diameter having nearly four inches (OF), experiences a certain resistance on the part of the orifice and the soft parts which line the superior strait. It is true that, by the aid of the continued contractions of the uterus, the head may overcome this resistance without changing its situation; but it will do so much more readily by flexing: thus the head, which presents demi-flexed, is solicited to complete its flexion, in order that a more favour-

* As I have already remarked in a preceding note, Dr. Chailly here mistakes the exceptions for the rule.—Ed.

† The diameter which presents is not altogether the occipito-frontal; it is somewhat less

‡ According to M. Nægele, in consequence of the lateral inclination of the head, these two diameters should not be parallel.

able diameter, the occipito-bregmatic (O B), may replace the occipito-frontal, which is larger, and thus the descent becomes more easy.

(Fig. 86.)

Flexion, First Period.



This flexion, therefore, favours the descent of the head; but it may not be accomplished, and yet delivery be effected; it is useful, but not indispensable. Thus, sometimes, in presentation of the vertex, it does not always precede the descent; sometimes even it fails altogether. Frequently the head presents, at the commencement, already flexed. The mechanism of this flexion will be readily understood, if it be remembered that the force of the uterine contraction, exerted on the trunk of the fœtus through the spinal column, falls on the foramen occipitale, that is to say, nearer the occiput than the chin; the occiput, in consequence, tends to descend, and the chin approaches the chest. Add to this, that the fœtus, which already presents the head demi-flexed on the chest, has exhibited a great tendency to flex itself still more. I shall content myself with this short explanation, without entering into mathematical details, which would only take me from my object.

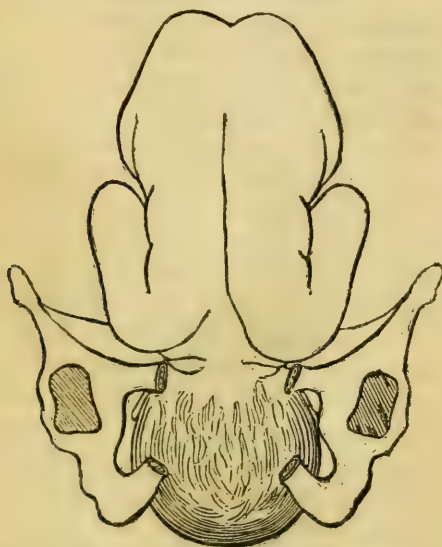
After flexion, the relations of the head change: of the two fontanelles, which were on the same level and on the same plane, the posterior descends and becomes more accessible, while the anterior ascends, and frequently is out of reach. Thus, the accoucheur is surprised at not being able to feel the anterior fontanelle, which he readily recognised at the commencement of the labour. The sub-occipito-bregmatic diameter takes the place of the occipito-frontal, and the head passes the superior strait presenting its smallest diameters.

(Fig. 87.)

Descent, Second Period.

B. Second Period, Descent.—In proportion as the head descends, its inclination ceases; the parietal protuberances are on the same plane, and the change in their position is complete when the descent of the head is perfected. The head is always flexed.

(Fig. 88.)

Rotation, Third Period.

C. Third Period, Rotation.—When the head reposes on the floor of the pelvis, the fœtus executes, in totality, a movement of rotation, which carries the occiput under the ischio-pubic branch; then the sagittal suture becomes parallel to the great diameter of the vulva, the occiput descends along the pubic arch, and the shoulders pass the superior strait. Figure 88 represents this movement.

D. *Fourth Period, Extension.*—Now the fourth period commences. The extension, the expulsive force, which, until now, acted upon the occiput, is directed upon the chin, because the posterior portion of the neck, in being placed behind the symphysis pubis, has destroyed, by its resistance, the sum of contractile effort which was exerted upon the occiput; the chin leaves, little by little, the chest, and passes along the concavity of the sacrum; we then see, successively, at the vulva the occiput under the pubes, then at the anterior commissure of the perineum (B), the anterior fontanelle (B), the forehead, the nose, and, finally, the chin. The diameters which measure the extension are the sub-occipito-bregmatic (S.o.-B), the sub-occipito-frontal (S.o.-F), the sub-occipito-mental (S.o.-M).

(Fig. 89.)

Extension, Fourth Period.



(Fig. 90.)

(Fig. 91.)



In figure 89, the sub-occipito-bregmatic (S.o.-B) is already out of the soft parts. In figure 90, the sub-occipito-frontal (S.o.-F) has just escaped; and, finally, the head has descended by its sub-occipito-mental diameter (S.o.-M), the chin is out of the soft parts, and the perineum upon the neck of the fœtus.

E. *Fifth Period, Restitution and External Rotation.*—As soon as the head has passed the vulva it falls towards the anus, remains a few seconds with its face backward, and then executes a slight movement of rotation, almost imperceptible, which carries the occiput towards the left groin of the mother; then there is a much more extended movement of rotation, which carries the occiput to-

wards the internal portion of the thigh of the same side. The first movement should be called the movement of restitution ; the second, which has improperly received this name, should be called the movement of external rotation. This suggestion is due to M. Gerdy. In fine, the first of these movements is determined by the necessity which the head feels of resuming its natural relations with the trunk ; it is, however, not constant : the second is nothing more than the external representation of the movement of internal rotation of the shoulders.

(Fig. 92.)

External Rotation, Fifth Period.



Although, in the majority of cases, the trunk follows precisely the different movements of rotation executed by the head, yet sometimes, at the moment the occiput is about passing under the pubes in an antero-posterior situation, the shoulders remain slightly diagonal, the neck of the child being somewhat twisted. The head once extended, and freed from the soft parts, and the neck of the child relieved from its torsion, the head resumes its proper relations with the trunk, and the occiput looks to the groin of the mother (movement of restitution). But the shoulders, not being able to pass the inferior strait in this nearly transverse situation, execute a movement of internal rotation, which places them in an antero-posterior direction ; the head follows externally this movement, and the occiput becomes in relation with the left thigh (movement of external rotation).

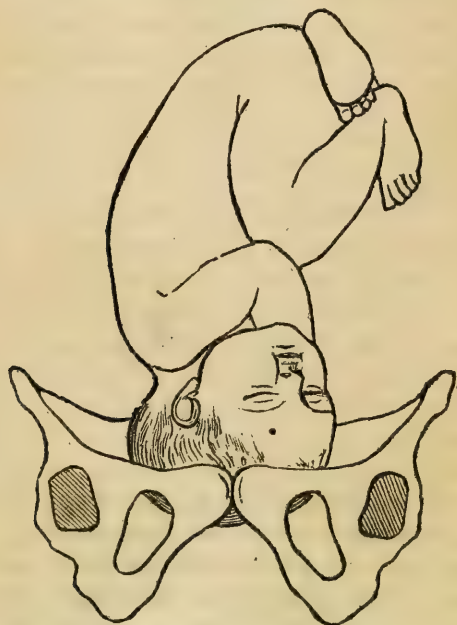
This last movement, however, is often the only one that is appreciable ; the first either is not necessary, because the neck of the infant has not been twisted, or it passes unperceived, so slight is it when it occurs.

It is, therefore, in a situation slightly diagonal that, in most cases, the shoulders pass the inferior strait. This rarely occurs when the head is situated in the antero-posterior diameter : the right shoulder is placed under the right ischio-pubic branch, the left in

front of the left sacro-ischiatic ligament, so that their bis-acromial diameter is in relation with the right oblique diameter of the inferior strait. The anterior shoulder, according to some, the posterior, according to others, descends the first. There is no general rule with regard to this point; and it may, moreover, be added, that frequently the two shoulders pass the vulva at the same time. After the passage of the shoulders, the trunk is immediately expelled, curving itself on its right lateral region, in order to accommodate the curvature of the excavation.

§ 2. *Mechanism of Natural Labour in the Right Posterior Occipito-iliac Position : second of M. P. Dubois, fourth of Baudelocque.*

(Fig. 93.)



In this position, which is the opposite of the preceding, the occiput is in relation with the right sacro-iliac symphysis. The forehead is situated behind the left cotyloid cavity; but the other relations of the head are the same. Thus, the sagittal suture and the occipito-frontal diameter are parallel to the left oblique diameter; the bi-parietal diameter is parallel to the other right oblique diameter. The parietal protuberance, which is in front, appears also lower; the two fontanelles are nearly on the same plane, but the posterior is much more difficult to reach than in the preceding position, because it is behind; the anterior, on the contrary, is more readily accessible. I have already remarked that the mechanism of labour in this position is accomplished according to the same laws, in the great majority of cases, as that I have just described. It is composed also of five periods, some of which present peculiarities important to note.

A. *First Period, Flexion.*—Before, as after the movement of the head, the diameters have the same relations with those of the pel-

vis as in the preceding case. After flexion, the posterior fontanelle becomes more accessible; the anterior, on the contrary, remains less so, but it may be reached by the finger, because it is in front of the pelvis.

B. *Second Period, Descent.*—Nothing to note.

C. *Third Period, Rotation.*—The head executes the same movement of rotation as in the preceding case, only the rotation is much more extended; the occiput traverses the whole right lateral half of the pelvis, and it gets under the pubes in order to pass out.

D. *Fourth Period, Extension.*—Nothing to note.

E. *Fifth Period, Restitution and External Rotation.*—The remainder of the expulsion is exactly the same as if the occiput were in front and to the right.

It is now easy to comprehend this mechanism in the other positions, the right anterior and left posterior occipito-iliac, as also in the transverse positions; so I shall pass them over in silence.

§ 3. *Mechanism of Spontaneous Delivery in the Varieties of Presentation of the Vertex.*

Causes of these Varieties.

I have already remarked, in the classification of the presentations, that these varieties depend on the different inflexions of the head of the fœtus on the trunk, and were not determined by the inclination of the organ. Such is the opinion of M. P. Dubois. But, although this is the case in most instances, yet I am satisfied that, under certain circumstances, rare it is true, these inclinations of the head depend on those of the trunk of the fœtus, which has been effected itself by the inclinations of the uterus.

Thus, taking the frontal variety of the vertex for example, see what would be the condition of the fœtus without an inclination of the womb (fig. 94); the head not flexed on the trunk, the anterior fontanelle felt by the finger, and occupying the centre of the superior strait.

(Fig. 94.)



(Fig. 95.)



On the contrary (fig. 95), in this variety, caused by an inclina-

tion, the head would present flexed, as in the complete presentation of the vertex, and the anterior fontanelle would also be felt in the centre of the superior strait. In a word, the diagnosis of the presentation of the head would be precisely the same in these two cases.

This distinction is not without profit in practice; for if, in the immense majority of cases, the varieties of presentations which are not determined by the inclinations become reduced almost always by themselves without the interference of art, it is not so with those due to these inclinations or obliquities. In this case, the uterus should be supported, and brought to its natural position during the contraction; in this way, two objects will be attained: 1st, the contractions of the uterus will be in the direction of the axis of the superior strait; 2d, the portions of the fœtus which are oblique will be placed in relation with this axis, and if the head follows the righting of the trunk, it will present, after the reduction, with its most favourable diameters. (See *Obliquities of the Uterus during Labour.*)

Parietal Varieties.

The parietal varieties of presentation are two in number; one for the left parietal bone, the other for the right.

A. *Diagnosis of the Parietal Varieties.*—At the superior strait, a tumour is felt, which has all the characters of the vertex; but the finger passes directly upon a more solid and prominent portion, which is the parietal protuberance (1). The sagittal suture (2) is quite under the pubes, when the posterior parietal protuberance, which is behind, occupies the centre of the pelvis; this is represented in the subjoined figure. This suture is in the concavity of the sacrum when the anterior parietal protuberance presents.

(Fig. 96.)



B. *Diagnosis of the Positions in these Varieties.*—It is precisely the same as in the positions of the full presentation. In a word, whether the head be inclined to the right or the left, the occiput will be in relation with all the points of the superior strait.

C. Mechanism of Expulsion.—The mechanism of expulsion is likewise the same as in the presentation of the vertex; only there is a period which precedes all the others, the period of reduction of the head to its proper position. After the reduction, the presentation of the vertex is complete, and the expulsion is accomplished as if the head had not presented in the first instance obliquely.

This occurs in most cases; sometimes, however, the head may descend inclined, without any previous change; the labour is then composed of five periods, as in the presentation of the vertex. After the descent, the head is righted in making the movement of extension. The vertex, however, has been delivered without being righted. Nature will almost always suffice, and it is very rare, as I shall have occasion hereafter to remark, that art is obliged to interfere in these parietal varieties.

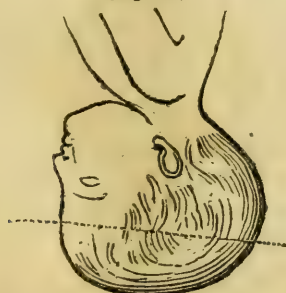
I have never known but one unreduced parietal variety to prevent the descent of the head. The records of the midwifery clinique of Paris do not contain one example of necessity for interference; and even in three cases in which the ear was felt at the mouth of the uterus, the delivery terminated spontaneously, without any change in the head. I might also mention a number of cases of parietal varieties, in which the head became righted before its descent; this is not uncommon.

Frontal Variety.

This variety of presentation of the vertex results from the head not presenting flexed, although it may not be extended, as occurs in the presentation of the face.

A. Diagnosis of the Presentation.—The finger arrives immediately at the anterior fontanelle, which occupies the centre of the superior strait, and it sometimes even reaches the root of the nose; but the posterior fontanelle cannot be felt, unless it should correspond with the anterior half of the pelvis, and even in this case it is difficult to reach it. The diameter which presents is nearly the occipito-frontal; it measures four inches. For the rest, all the other characters are those of the vertex presenting demi-flexed.

(Fig. 97.)



B. Diagnosis of the Position.—The same as in the full presentation of the vertex, but it is more difficult to ascertain, in consequence of the elevation of the posterior fontanelle.

C. Mechanism of Expulsion.—The mechanism of expulsion, in this case, is composed of five periods, as in the full presentation, the period of flexion being somewhat more protracted. Should the period of flexion fail, the descent will nevertheless take place, provided the pelvis is well formed, and the head possesses its ordinary dimensions. The width of the superior strait of a well-formed pelvis being at least four inches and three lines for the oblique diameters, in which the head always tends to descend, and the head measuring but four inches when it presents by its frontal variety, there can be no difficulty in the descent. If the uterus should contract, and the head not descend, there will be some obstacle entirely independent of the presentation; an excessive head, for example, or a contracted pelvis, which would not allow the head to pass even if flexed. The frontal variety, therefore, never forms an impediment to delivery when the pelvis is natural. I have even seen delivery accomplished in one case in which the pelvis was sensibly contracted. A female named Vanesse, at full term, was brought to La Clinique 10th of October, 1840, at 4 o'clock in the evening. She had been in labour since Friday, 9th of October, at 8 o'clock in the evening. The head, which presented in the first position of the frontal variety, did not descend, notwithstanding energetic uterine action. The child had ceased to live. A short time after this woman was brought to the ward, the delivery made some progress, but the contractions of the uterus becoming slower, the sage-femme in chief, Madame Callé, sent for me. On my arrival, I found the head so low down that I did not think it necessary to do anything. In fine, notwithstanding the slight contractions, the head had executed its movement of rotation; it was resting on the floor of the pelvis, and the occiput, placed under the pubes, had already commenced to distend the vulva, so that in a few minutes after my arrival the delivery took place spontaneously, the 10th, at 8 o'clock in the evening, after twenty-four hours' labour.

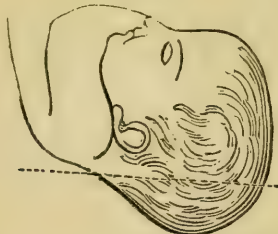
The pelvis of this woman was contracted; and this circumstance alone retarded the descent of the head; and yet, with the frontal variety, the descent took place, although the pelvis was not natural. From this we may judge what will occur in a well-formed pelvis. I only cite this case to prove the facility of descent by the occipito-frontal diameter in a normal pelvis, and not with a view of encouraging inaction in similar cases. If, in a word, the person who had charge of this patient had interfered at the proper time, after having ascertained the insufficiency of the uterine contractions, and the prolonged sojourn of the head at the superior strait, this delivery would not have been followed by such serious results both to mother and child. The child perished in consequence of the delay in the delivery; and the continued sojourn of the head at the superior strait produced an eschar, from which resulted a vesico-vaginal fistula. However, it must be admitted that these accidents are not always the necessary consequences of a prolonged delivery: children are frequently born alive, without injury to the soft parts of the mother, after a much longer

and more painful labour than that I have just described. Moreover, if the pelvis had been well formed, it is manifest that these accidents would not have occurred to mother and child. In this case, the child having ceased to live, and the head being low down when I was called in, I congratulated myself for not having interfered; for the forceps would certainly have been blamed for the consequences resulting merely from delay in the delivery.

Occipital Variety.

A. *Diagnosis of the Presentation.*—In this presentation, which is the reverse of the preceding, the head presents very much flexed, and the posterior fontanelle occupies the centre of the orifice; the anterior fontanelle is very difficult to reach if it be in front, and impossible if behind. The diameter of this presentation is favourable to the descent of the head; it extends from the lower portion of the occiput to the vertex, and measures three inches six lines.

(Fig. 98.)



B. *Diagnosis of the Position.*—The diagnosis is the same as in the full presentation, but more difficult to recognise, because only one fontanelle can be reached.

C. *Mechanism of Expulsion.*—There is only one peculiarity worthy to be mentioned in spontaneous delivery—the first period of flexion is entirely wanting, for the head presents already very much flexed; it even becomes slightly extended in proportion as it descends. The expulsion is as easy as in the full presentation. (For the exceptions, see *Manipulations.*)

Prognosis.

In the great majority of cases, the prognosis is as favourable as in the full presentation of the vertex. In the early contractions, the head is righted, or descends, strongly flexed, and the delivery is as rapid and fortunate as if the head presented in full.

If I insist somewhat on these varieties of presentation, it is less on account of their practical importance than a desire to omit nothing which bears on the presentations of the fœtus. These varieties scarcely ever constitute a difficulty; and when they do, they must be greatly exaggerated, which is very rare in a fœtus at full term. When the ear is felt at the superior strait, or the posterior portion of the neck occupies the centre of this strait, or even the forehead, nature will suffice in most cases, and will much better correct these obliquities than the hand. (See *Manipulations.*) In a word, what-

ever may be the presentation, when the head occupies the superior strait, provided the pelvis and head are both well formed, nature will almost always be sufficient to effect the descent.*

ART. II.—ANOMALIES IN THE MECHANISM OF SPONTANEOUS DELIVERY.

1. *Flexion.*

I have already stated, when speaking of the movement of flexion, that this first period frequently took place simultaneously with the descent. It may, however, fail, either because the head presents already flexed, or because it descends without undergoing flexion. This movement sometimes is not effected until the head has reached the floor of the pelvis. The movement of flexion also exhibits some irregularities; it is not rare, especially in the occipito-posterior positions, for the chin, instead of approximating the chest, to become more remote from it, and the head is consequently extended, so that the anterior fontanelle approaches by degrees the centre of the pelvis, as if the frontal variety of the vertex presented. This variety is ordinarily temporary, and the head becomes flexed after reaching the floor of the pelvis. In some cases still more rare, and which are the reverse of the preceding, whether the flexion of the head has exceeded its ordinary limits, or the trunk of the foetus becomes thrown back on its posterior region, the occipital fontanelle occupies the centre of the excavation, as in a variety of occipital presentation. Having descended to the floor of the pelvis, the resistance which the head encounters there gradually places it in its natural position.

* It will be found, I think, that nature is not always competent to overcome the difficulty of these mal-positions. For example, when the side of the head presents at the superior strait, the relation which the occipito-mental diameter of the head bears to the oblique diameter of the strait is such as to render it physically impossible that the head can pass, unless the position should be changed either by the spontaneous efforts of nature, or the manipulation of the accoucheur. Should it, therefore, prove that nature is unable to right the head, and it be suffered to remain in this position after strong uterine contractions, the child will inevitably be sacrificed, and the mother herself incur serious hazard. I should, therefore, recommend the pupil to ascertain *early* the condition of things at the superior strait: if he find such a position of the head as to require redressing either by nature or himself, let him be vigilant, and not yield too much time to nature; for if the neck of the womb should be well dilated, and the membranous sac ruptured, and yet no alteration in the head, the womb, in consequence of the escape of the liquor amnii, firmly grasps the head and surface of the child's body: the contractions only tend to *wedge* the head (if I may so speak) at the superior strait, and the difficulty of manipulating will generally be *proportionate to the time elapsed since the escape of the amniotic fluid*. Let the pupil, therefore, not lose time precious to the safety of the child, but proceed, while the womb is soft and dilatable, to correct the mal-position. In this case, there will be one of two indications: either to right the head and commit the achievement of the delivery to nature, or have recourse at once to *version*, and bring down the feet. The choice of these operations will depend on the condition of the patient. Should nothing untoward present itself, save the mal-position, the mere righting of the head will be sufficient. Should the patient, however, be exhausted, or suffer under any other serious complication of natural labour, the operator should at once proceed to turn, and thus complete the delivery. In order to correct the mal-position, it will be necessary to introduce the hand into the vagina, pass it up to the superior strait, and gently place the fingers on the side of the head, the other hand steadying the uterus through the abdomen; the hand thus placed at the superior strait will cautiously elevate the head, and at the same time incline the vertex downward, thus converting the position into an ordinary one of the vertex. The manner of acting when the forehead or occiput presents will be indicated hereafter; and the reader is referred for the rules of version to the excellent precepts of our author, which will be found under their appropriate head.—Ed.

§ 2. *Descent.*

The anomalies during the time of descent depend on circumstances unconnected with the presentation, and which require the intervention of art. I shall not, therefore, for the present, occupy myself with them.

§ 3. *Rotation.*

The movement of rotation most generally does not take place until the head has reached the floor of the pelvis; however, it may be executed, in part, during the period of descent, and be completed after the head has passed to the perineum. Likewise, it may not be accomplished until the head, having passed the inferior strait diagonally, is about protruding through the soft parts. I have often noticed this in primiparæ. The head can readily descend through the inferior strait diagonally, accommodating its occipito-frontal diameter to one of the oblique diameters of this strait; then, having reached the vulva, the great diameter of which is the antero-posterior, it is forced to complete its movement of rotation, in consequence of the resistance of the soft parts.

There is another anomaly which I have observed. The occiput having been at the right or left, may pass from the opposite side without stopping under the symphysis pubis, and the accoucheur is surprised to find a position different from what he recognised at the commencement of labour. After this excess in its movement of rotation, the occiput returns, and finally passes out under the pubes. This anomaly rarely occurs in an opposite direction. However, I observed it once at La Clinique: the occiput, which was transverse and to the left, placed itself in relation with the sacro-iliac symphysis of the same side; then, passing in front and below the sacro-vertebral angle, it traversed the whole right lateral wall of the pelvis, and passed out under the pubes, as would have been the case in a right posterior occipito-iliac position, reduced to an anterior.

A. *Descent of the Vertex in the Occipito-posterior Position.*—Finally, this movement of rotation, which I have just represented as taking place either prematurely or tardily, and as being complete or excessive, may also occur in a contrary direction: thus, for example, in a right posterior occipito-iliac position, the occiput, by a rare exception, instead of passing under the symphysis pubis, may be turned into the concavity of the sacrum; and, in this case, the expulsion is terminated most frequently by the sole efforts of the uterus; an opinion which was not generally received in the last century.

The head becomes considerably flexed, descends diagonally in the superior strait, and in proportion as it passes this strait, the occiput gets into the cavity of the perineum; or the head descends diagonally in the superior strait, and then passes out of the inferior strait in the same direction, without going to the concavity of the sacrum. Be it as it may, the perineum, greatly distended, becomes elongated,

the occiput traverses its concavity, appears at its anterior commissure at the same time that the forehead is under the pubes, and the head passes out by its occipito-frontal diameter. The perineum requires, in this case, very particular attention (see fig. 99).

(Fig. 99.)
Side View of the Pelvis.



It is thus, in most cases, that the occipito-posterior descent is effected, and not as has usually been described. The occiput does not descend first, and, after its expulsion, the anterior fontanelle, coronal suture, forehead, nose, mouth, and chin, do not pass successively under the symphysis pubis.

However, although this delivery is spontaneous in most instances, it does not terminate so easily as in the occipito-anterior positions. In a word, in the occipito-anterior positions, the inflexible line (O I) which extends from the lower portion of the occiput to the atlanto-axoid articulation, is very small, and accommodates itself readily to the posterior part of the symphysis pubis, and permits the occiput to pass the symphysis without difficulty; while, in the posterior positions, this inflexible line (1 2, fig. 99) extends from the occiput to the first dorsal vertebra; it is, therefore, more extended, and, as it is straight, it accords badly with the crooked canal to be traversed by the fœtus; for, in order that the occiput may reach the anterior commissure of the perineum, this line must traverse the posterior wall of the excavation, which is much longer than the

(Fig. 100.)
Side View of the Pelvis.



anterior, and it must also right the floor of the pelvis (3). Now, in order that these things may be accomplished, the anterior flexion of the fœtus should be very marked, and the resistance of the perineum overcome. This expulsion, in most cases, is longer and more painful to the mother, and requires energetic and continued uterine action.

But this difficulty in the expulsion is not because the contractions of the uterus fall indirectly upon the fœtus. I believe, on the contrary, that the fœtus, by its situation, constitutes in the occipito-posterior position an uninterrupted line, which transmits the force of the contractions to the occiput much better than in the anterior position, where the line represented by the fœtus is broken at the articulation of the neck. In order to be satisfied of this, it will only be necessary to examine the two preceding figures (99, 100), and compare them.

The spontaneous expulsion may be effected in another way, in the posterior positions. The presentation of the vertex, in consequence of the extension of the head, may be changed in the excavation into a presentation of the face. The chin then passes out first under the pubes; but for this change of presentation to take place in the excavation, the diameters of the latter must be very large, or those of the head considerably reduced, for the occipito-mental diameter, measuring at least five inches, cannot be in relation with the diameters of the excavation, which in the natural state measure at most four inches and a half.

This movement of rotation may fail altogether; and art, in this case, is often forced to interfere, not, as I have remarked, because the head cannot pass the inferior strait when it is diagonal, but because the resistance of the perineum, especially in primiparæ, opposes the passage of the head through the vulva, unless the rotation is complete.

§ 4. *External Rotation of the Head, Internal of the Shoulders.*

The rotation of the shoulders may also offer some varieties: it may be incomplete, or be wanting altogether, as I shall hereafter explain, in consequence of the more or less resistance of the perineum; and, in this case, the external rotation of the head is executed imperfectly or not at all, which confirms in every particular the opinion of M. Gerdy with regard to the movement of rotation.

Finally, the rotation of the shoulders may also be excessive: thus, in the left anterior occipito-iliac position, after the expulsion of the head, the shoulders are transverse; the shoulder which is to the left should pass in the concavity of the sacrum, in order that the bis-acromial diameter may be placed in an antero-posterior situation. But, instead of going to the concavity of the sacrum, this shoulder may pass under the pubes, while the right shoulder gets to the concavity of the sacrum, and the back, which corresponded to the left, is in relation with the right side. The rotation of the head, which, as I have remarked, is the consequence of the rotation of the shoulders, is also executed in this case in an inverse di-

rection, and the occiput, in lieu of regarding the left thigh, turns towards the right. Another confirmation of the opinion of M. Gerdy.

§ 5. *Cause of the Movement of Rotation.*

As is readily seen from the description which I have just given of spontaneous delivery, the occiput, no matter with what point of the superior strait it may have been in relation, passes under the pubes. What is the cause of this movement of rotation? Before the time of M. P. Dubois, it was supposed that this cause was due to the inclined planes, the anterior and the posterior, which conducted the occiput under the pubes, when it corresponded to the anterior half of the pelvis; and to the concavity of the sacrum, when it was originally in relation with the posterior half of the excavation. Neither was the conversion of a posterior position into an anterior admitted. However, if the inclined planes had such a direct action on the rotation of the head, this movement could not be executed below these planes beyond their sphere of action; and we know very well that this movement, in the majority of cases, does not commence until the head rests on the floor of the pelvis, and after it has already passed the planes. Again, if the inclined planes determined the movement of rotation, the two anterior planes would always place the occiput in front, when this portion of the foetal head corresponded to one of the points on the anterior of the pelvis, while the two posterior planes would throw the occiput backward, when in relation with the posterior portion of the pelvis. Experience, however, proves that the occiput always comes in front, no matter to what point of the upper strait it may correspond. Where, therefore, is the influence of the posterior inclined planes? M. P. Dubois, on the contrary, is of opinion that this cause is owing to a number of circumstances viz., on the one hand, to the volume, form, and mobility of the parts expelled; and, on the other hand, to the capacity and shape of the pelvic canal. And such is the influence of this combination, that the different parts of the foetus are placed in situations the most favourable to their expulsion. From the occipito-pubic position being the most favourable, all the positions reduce themselves to this type during their passage. The floor of the pelvis in this rotation undoubtedly exerts the greatest influence; the rotation is evidently produced by the resistance the floor offers to the various portions of the foetus. The observations which M. P. Dubois made at the Maternité render this explanation simple and intelligible. I will allow the professor to speak for himself: "In a woman who had died some time after delivery, the uterus was opened to within a short distance of the orifice. The foetus was placed at the orifice, which was dilated and soft, in the right posterior occipito-iliac position of the vertex. Several sages-femmes compressing and pushing the foetus from above downward, caused it to descend without difficulty into the excavation of the pelvis. Much greater effort, however, was necessary to make it traverse the pe-

rineum, and pass the vulva; and it was not without surprise that we saw, during three successive attempts, when the head traversed the external genitals, that the occiput turned forward and to the right, and the face backward and to the left. We repeated the experiment the fourth time; but on this occasion the head passed the vulva, the occiput remaining posteriorly. We next took a fœtus which had died the preceding night, and much larger than the former; we placed it in the same situation as the first twice successively, and the head passed through the vulva, after having executed its movement of rotation: in the third and following attempts, it descended without executing the movement. Thus the movement of rotation did not cease to take place until the perineum and vulva had lost the resistance necessary for its accomplishment." The daily observations of practitioners tend likewise to confirm the views of M. P. Dubois. Thus, for example, when twins are expelled, the first which presents is expelled regularly; the rotation of the head and shoulders is accomplished; the perineum opposes a proper resistance; but the dilatation of the genitals, in consequence of its expulsion, is such, that the second fœtus, especially if it be smaller than the other, not experiencing on the part of the perineum sufficient resistance, is frequently expelled in the situation in which it was originally placed, without any movement of rotation. It is for the same reason that, in delivery of the vertex, rotation is effected the more regularly as the head is larger, and the perineum more resisting. This is observed in primiparæ; and if, after the expulsion of the head, the shoulders are so frequently observed to pass out irregularly, is it not because they have been preceded by the head? Finally, when the perineum has been ruptured by preceding deliveries, particularly if the fœtus is very small, it is expelled in most cases without undergoing any of the movements usually observed in spontaneous delivery. Everything goes to show that the rotation of the head and shoulders depends upon the exact relation of the fœtus with the parts of the mother through which it has to pass.

ART. III.—DELIVERY OF THE VERTEX IN TWIN CASES.

It is very rare to find two fœtuses presenting simultaneously by the vertex; but if, as an exception, it should so happen, the expulsion is effected according to the same laws as in the case of a single birth; only, as I have already remarked, the expulsion of the second would be accomplished less regularly, because it would successively traverse passages already dilated by the other fœtus (see the preceding paragraph); the second is, in general, expelled a few moments after the first. Sometimes, however, the delivery may be delayed several hours, and even days. In these cases, unless there should be some accident, the accoucheur should do nothing.

ART. IV.—PROGNOSIS.

The prognosis of the presentation of the vertex is very favourable both for mother and child, especially in primary or secondary occipito-anterior positions; it is less favourable in occipito-posterior positions remaining such; the descent is more difficult; and sometimes even, though rarely, art is obliged to interfere, and both these circumstances are of a nature to compromise the life of the child and the health of the mother. Thus, notwithstanding the greatest possible care, the perineum may be more or less lacerated; it may even have the central perforation, the fœtus escaping between the anterior commissure of the perineum and anus. M. Moreau has recorded some examples of this. In a word, the prolonged sojourn of the head in the excavation may determine sloughs, and urinary or stercoral fistulæ.

The life of the infant is compromised in this presentation about once in fifty deliveries.

CHAPTER I.

ATTENTIONS REQUIRED BY THE WOMAN DURING LABOUR.*

§ 1. *Instruments to be provided by the Accoucheur.*

WHEN the accoucheur is called upon to give his assistance to a woman in labour, he should always supply himself with the forceps. In fact, the life of the child, and sometimes even that of the

* The first entrance of the young accoucheur into the lying-in chamber is a matter of no little importance. In the first place, he has popular prejudice to contend with—he is not an “old gentleman, and therefore he knows nothing of his business.” The only means left him of putting an end to this prejudice, and of demonstrating that, although not a patriarch in years, yet that he is fully competent to the discharge of his duties, is his conduct after he crosses the threshold of the parturient chamber. One mistake at his début in obstetric practice may exert a singularly unhappy influence over his future prospects; but should he, on the contrary, make a “favourable impression” in his first case, the best consequences may ensue to him. Something more is required of the accoucheur, if he wish to succeed, than a profound knowledge of his subject: with this must be blended an intimate acquaintance with all the details of the sick room; he must understand human nature; he must distinguish between a harmless concession to popular whim and caprice, and a concession which may compromise his own character and the dignity of his art; in a word, he must constantly bear in memory the full measure of his responsibilities, and never, for the purposes of self-aggrandizement, prove recreant to the high trusts confided to his care.

Punctuality and promptness in responding to professional calls are especially important in the practice of obstetric medicine. We will now suppose that a messenger has arrived, requesting the immediate attendance of the accoucheur. The latter proceeds, without delay, to the residence of the patient—he rings the bell—he is admitted, and if this should be his first professional visit to the family, all eyes are naturally turned towards him, surveying him with marked care, and if he falter under the scrutinizing gaze, it will be attributed to want of professional skill! The accoucheur's general bearing, as soon as he enters the house of his patient, should be that of a well-bred gentleman: he should manifest no excitement; but his general conduct should be such as to show that he is accustomed to these calls, and understands how to comport himself. Soon after he has been introduced into the parlour, the nurse will probably leave the patient for the purpose of having a little chat with the doctor. In this interview with the nurse, much can be learned as to the general condition of the patient—whether she is much alarmed—whether she has suffered much from her pains—whether it is her first child—whether she is nervous and irritable—whether she is agitated

mother, will often depend upon immediate delivery, and the time necessary to procure the instrument will expose both mother and child to serious danger. He should also have with him an ordinary female catheter, and one of gum-elastic (No. 9), in case the introduction of the silver catheter should be impracticable; in addition, he should be provided with an instrument to push up the cord, in case of necessity (see figures 107, 108); a laryngeal tube, lancets, &c.; these instruments are indispensable. I am also in the habit of taking with me a speculum, lint, waxed thread, and a tampon forceps, in case hemorrhage should render the tampon necessary; a small syringe, in order to inject the rectum in asphyxia of the infant, and a feather quill to remove any mucus which may collect in the throat, and cut in the shape of a toothpick to pierce the membranes, should it become necessary; also, a small box containing the extract of belladonna, and another containing cerate.

Although most of these articles may be readily procured after arriving at the bedside, they increase so triflingly the volume of the forceps, that it is better to have them provided in advance. I have never regretted this precaution. I am always particular in concealing from view the instruments, after taking from the case those which may be absolutely necessary during natural labour; such as the sound, stethoscope, &c.

2. *To ascertain that the Female is Pregnant and in Labour.*

Arrived at the bedside of his patient, the first duty of the accoucheur should be to ascertain that she is really pregnant; and if pregnant, that she is in actual labour.

So many circumstances may induce the belief that pregnancy

at the doctor's arrival, &c., &c. These preliminary inquiries over, the nurse then leaves, with the promise that, in a few minutes, she will return and conduct the doctor to the sick-room. As soon as he enters the room, his presence will be privately announced to the lady, who has already been prepared by the nurse for his reception. He then advances towards the bed, and enters into conversation with his patient, talking of any and every thing except of the subject directly connected with the object of his visit. In this way, she becomes accustomed to his presence—the first interview has passed, and she finds that, after all, it is not such a dreadful thing to talk to a doctor, and, if he is adroit, he will have impressed her very favourably, merely by his *manner*. During this conversation with the patient, the accoucheur will probably notice (if the labour has really commenced) that she is suffering occasionally from pain, which she may endeavour to conceal, but which she cannot effectually do. If these pains are severe, having the character of undoubted labour pains, he should mention privately to the nurse that the labour appears to be advancing, and that it now becomes necessary for him to ascertain the exact condition of things by an examination. This the nurse will immediately understand, and she mentions the fact to the lady, who, of course, will generally assent without any difficulty. The accoucheur then asks the nurse for a napkin, which he has carefully pinned upon the arm of the hand which he intends to introduce into the vagina. The hand is then well lubricated with sweet oil, flaxseed, or some mucilaginous substance. If the accoucheur has the choice of position, he will find an advantage in examining the patient upon her back. Everything being thus prepared, he then proceeds to the examination without the slightest exposure of the patient, with all the gentleness and delicacy due to the situation of the lady who has confided herself to his skill and honour. I cannot concur in opinion with Dr. Chailly, that the accoucheur should make the vaginal examination before obtaining the consent of his patient—in this country, at least, such conduct would not be tolerated. Nor do I see the necessity for providing himself with the numerous instruments detailed by our author. A lancet and catheter are all the instruments absolutely necessary for the accoucheur to have about him until there is a positive indication that others are required. I hold it to be indiscreet, to say the least, to carry the forceps with him to every case of midwifery he may be called upon to attend; if this instrument should be required, there will generally be sufficient time allowed to procure it; and, moreover, it is well not to have temptation in our way.—ED.

exists and labour has commenced, that we cannot be too much on our guard against error ; not that this error would be prejudicial to the woman, but it would occasion a loss of time, and might compromise the reputation of the accoucheur.

The touch is the most certain means of arriving at this knowledge ; but the accoucheur should not practise it immediately, unless, on his arrival, he should judge, from the nature of the pains, that the labour is considerably advanced ; he should allow time sufficient for the patient to become familiar with his presence.

He must commence by inquiring into the different circumstances of her pregnancy ; he calculates with her whether she is at term ; and if she has had children, he must question her as to her preceding labours. This conversation may lead to useful indications for his conduct, and he may be admonished of accidents which, having complicated her former deliveries, may also present themselves in the present accouchement. The accoucheur should also assure himself that the woman has perceived the active movements of the fœtus ; and if she is in a proper position, he may ascertain, by means of auscultation, whether the infant is alive or dead.

During this time, he observes at each pain the nature, duration, and energy of the contractions, and if he has some little tact, this examination alone will suffice to enable him to fix the particular period of the labour ; he will also, in this examination, distinguish the true from the false pains. In the normal contractions, the pains ordinarily commence in the back, and encircle the abdomen like a band ; they expend their force on the abdomen and towards the genital organs, return at regular intervals, and are separated by a perfect calm. Those, on the contrary, which merely simulate labour, are more or less continuous, and are produced by intestinal colic. They are recognised by the irregularity of their return, and of their seat, and by heartburn and diarrhœa, which sometimes accompany them.

Occasionally, there are pains which have their seat in the uterus, returning at regular intervals, and which resemble the pains of childbirth, without the presence of any other sign of labour. The most skilful practitioners may, in this case, be deceived by these appearances. The touch is the only means of removing all doubt ; yet it does not always destroy the uncertainty, for these pains may determine the commencement of labour. The neck of the uterus opens, the membranes become tense, and the contractions continue for some hours ; then everything again becomes calm, and after a few days real labour is declared. I have often observed these premature contractions manifest themselves, called, ordinarily, false labour. I have known them, in some women, reappear at different times during the last two weeks of pregnancy. How then, it may be asked, are we to distinguish, at first, this commencement of labour from a regular labour, which continues until completion ? I do not think it possible to guard against the error, time alone being able to enlighten the accoucheur in this particular.

§ 3. *The Touch during Labour.*

These preliminary preparations once accomplished, it is necessary to proceed to the touch. I prefer, for this operation, that the woman should be lying down; this position is less disagreeable; moreover, it allows the finger to penetrate farther forward. However there is no objection to the standing position; but in this case the back of the patient should be supported by a wall, or some solid piece of furniture.

In general, I do not inform the patient of the kind of investigation I am about making; and, under pretext of listening to the pulsations of the heart, I cause her to assume the recumbent posture; then, after finishing the auscultation, I immediately practise the touch.

Frequently, there is a very natural resistance on the part of the woman; then, without withdrawing the hand, she should be informed of the positive necessity of the examination, both as regards herself and her child; the finger, previously lubricated with lard, once introduced, the first object of inquiry should be whether the patient is pregnant, and this is to be ascertained by aid of the ballottement, &c. (see *Diagnosis of Pregnancy*), in case, in consequence of the contractions, the ear should not be able to detect the pulsations of the foetal heart; then it should be ascertained if the pregnancy has arrived at its full term, in order that the labour may be resisted, if premature. The dilatation of the uterine orifice, the tension of the membranes during a pain, the relaxation of these parts when the pain has ceased, will indicate whether or not the patient is in labour. The frequency and duration of the contractions, the thinning of the neck of the uterus, and its degree of dilatation, will enable us to form an opinion as to the probable duration of the labour. The particular conformation of the pelvis, the state of the genital organs, the nature of the presentation, and the position of this presentation, should likewise be ascertained. It will not be necessary, however, to insist too rigidly on these investigations, when the position is difficult to recognise, for it will suffice, in the majority of cases, to ascertain the presentation, in order to know whether the delivery is to be committed to the natural efforts, or whether it will become necessary to interfere; it would only be in the case of an improper presentation, which required the aid of the accoucheur, that he would be authorized to insist on the diagnosis of position.

§ 4. *Choice of Place for the Delivery of the Woman.*

As soon as these important points are settled, it will be necessary to prepare the chamber and bed for the delivery, as also all the auxiliaries which may be needful. The chamber should be, as far as practicable, spacious, quiet, and well ventilated; the temperature should be moderate, for heat predisposes to hemorrhage and inertia of the womb, and cold to peritoneal inflammations.

All useless persons should be dispensed with, and especially

those whose presence may be displeasing to the patient; sometimes the husband is of the number; he should then be requested to leave, under pretext of soothing his sensibility. Most women, on the contrary, are anxious to have their husbands near them at this time. The sagacity of the accoucheur will enable him to judge of the course to be pursued in these matters.

§ 5. *Regimen.*

It is proper for a woman in labour to abstain from nourishment. In fact, all the vital forces appear to concentrate upon the uterus, and, as it were, abandon the other organs; digestion is not performed, and most frequently the food is rejected. However, if the labour should be protracted, some broth may be given. As to drinks, they should be mild and refreshing; and we should rigidly proscribe the use of warm wine and spirituous liquors, by the aid of which some women imagine that their strength is sustained, but which are more likely to determine inflammations and active hemorrhages, and tend rather to weaken than invigorate the system.

§ 6. *Attention to the Rectum and Bladder.*

The accoucheur should be very particular to have the rectum evacuated; the woman should be advised to take a lavement; and if it prove ineffectual, a second should be administered, with the addition of a small quantity of common honey. In order to facilitate the passage of the head, the rectum should be completely emptied; and this precaution has the advantage of avoiding the involuntary expulsion of the fæces at the moment the head presses upon the perineum.

The woman should be requested to void her urine, and during this time the accoucheur should leave the room. But if the emission of urine be impossible, the catheter should be introduced, and without uncovering the patient. The catheter, placed on the palmar face of the index finger of the right hand, should be introduced into the vagina; the extremity of the finger, extending beyond the catheter, will feel for the small tubercle, which is situated at the anterior extremity of the urethro-vaginal septum, and but a very short distance from the orifice of the urethra. The finger, without leaving this point, will raise the extremity of the sound, and cause it to penetrate without difficulty, provided the operator has some little skill. It must be admitted, however, that the introduction of the catheter is sometimes impracticable in this manner, and the accoucheur is under the necessity of uncovering the patient. This difficulty is in consequence of the bladder being pushed up above the superior strait, and drawing with it the urethra; the meatus urinarius is carried upward, and is lost behind the border of the symphysis pubis. In this case, it is absolutely necessary that the parts be exposed to view. It sometimes is necessary, in order to penetrate the bladder more readily, to use a flexible gum elastic sound.

§ 7. *Dress.*

The patient need not be undressed, but she should be attired according to the season, in order that she may leave her bed, and walk if necessary; the dress should be loose, and garters dispensed with.

§ 8. *Objects necessary to Reanimate the Infant.*

There should be placed on a table near a window, easy to open, a flannel folded in several doubles to receive the infant, in case it should require reanimation, and the impression of the atmosphere. There should also be provided some napkins, vinegar, cold water, compresses, and a feather quill; also a ligature for the cord about seven inches in length, and knotted at its two extremities; scissors, a compress, and bandage for the umbilicus.

§ 9. *Preparation of the Bed.*

These precautions being completed, by which all confusion will be avoided at the moment of the birth of the infant, the preparation of the bed should next be attended to. The construction of the bed varies according to the particular country. In France, a cot is used, on which is placed a mattress, the upper portion of which is raised by means of chairs reversed. This bed has always appeared to me to be very inconvenient for the patient. I have substituted for it an ordinary bed, with mattress, counterpane, pillows, and the usual covering. The woman finds herself at ease on this bed; she can readily change her position, and sleep during the intervals of pain. I am careful to place under the mattress, at the point corresponding with the breech of the patient, a hard cushion, in order that the breech may not sink into the bed, and to afford an opportunity to give proper support to the perineum, as also that the head of the fœtus, at the moment of its expulsion, may be sufficiently elevated to avoid the fluid which necessarily escapes at the time.

Moreover, this bed, by its arrangement, allows the patient to remain quiet for some time after delivery, so that when she is removed to her ordinary bed, she is clean and comfortable, it being understood that care be taken to place a piece of oil-cloth on the first mattress, in order to protect it.

If the woman should not have sufficient persons around her to furnish a point of support during the contractions of the womb, a bar of wood should be placed across the foot of the bed, which will afford the feet a proper support.

Before the rupture of the membranes, the woman may be either in the standing or recumbent position; but after the rupture, she should be placed on the bed, and should not be permitted to leave it; unless walking about the room should be deemed necessary to give activity to the pains. The accoucheur sits on the right of the bed; he ascertains from time to time, by means of the touch, the progress of the labour, and gives encouragement to his patient, and

directs her efforts. He should not read, nor fall asleep, unless overcome by fatigue: the suffering woman requires all his attention. As a matter of policy, the accoucheur should be particular on this subject, for I have known women discharge their medical attendants from motives as slight as this. Most women, from the commencement of labour, make strong efforts, with a view to hasten the expulsion. But they exhaust themselves without profit, as long as the neck of the uterus is not dilated, and the bag of waters unruptured. The patient should be instructed to bear down only at the proper time, and during the presence of pain. If she should experience severe pain in the back, she may be relieved by passing under her loins a napkin folded lengthwise, the extremities of which should be raised by a person on each side of the bed.

All these little attentions should be shown without uncovering the patient; even at the moment of the expulsion of the child, this is rarely necessary, unless the perineum should require some particular care, &c.

Finally, when the latter period of labour arrives, and the head compresses the inferior portion of the rectum, the woman experiences an imaginary desire to evacuate the bowels, and requests to be permitted to go to the garde-robe; but this request is not to be assented to, and she should be informed that the desire is illusory; for women have been known to be delivered while at the garde-robe, and the hazard both to mother and child under such circumstances is apparent. Should she insist, and even if there should be an involuntary evacuation, the accoucheur, in order to soothe her delicacy, should still affirm that she is mistaken, and at the same time pass under her a clean napkin. Should she not credit the assertion, and be perfectly aware of the accident, it will be well for the accoucheur to appear to be ignorant of what has occurred. This inconvenience takes place often at the time of the passage of the head, while the accoucheur is supporting the perineum; he should be careful to interpose between this part and his hand a linen folded several doubles.

§ 10. *Support of the Perineum.*

In order to support the perineum, the accoucheur places himself on the right side of the patient; the right arm is passed under her right thigh, and he presses the perineal surface, especially on the side of the anus, with the palmar face of the hand, and the radial border of the index finger is placed on the anterior border of the perineum, and the thumb extended on the right thigh.

But this precaution would be useless, and the perineum frequently ruptured, if the woman were not requested to moderate her efforts during this time. For fear that the request should not be complied with, and the head be too rapidly expelled, I pass my left arm on the right thigh of the patient, and place my fingers on the vertex of the head, in order to support it. Thus I allow the head to pass at my pleasure between this hand and the perineum, when the parts are in a condition to allow it without laceration.

(Fig. 101.)



As soon as the head is expelled, it is to be simply supported in raising it towards the pubes; then the finger is to be passed between the symphysis pubis and neck of the infant, in order to ascertain whether the cord encircles this latter. Should it be found around the neck, a sufficient length of the cord should be drawn out to allow it to pass over the head, or, if this is not possible, it should be cut, and slight tractions made on the head, which will suffice in most cases to determine the expulsion of the shoulders; but should these tractions not prove sufficient, the accoucheur should, without delay, hook, with his index finger, the shoulder which is situated posteriorly, and bring it down.

It is generally supposed that the perineum is in no danger after the passage of the head, and it is rarely supported at the time the shoulders are expelled. I am satisfied, however, that most of the lacerations of the perineum are produced by the passage of the bis-acromial diameter, simply because the perineum is not supported at this moment; hence the passage of the shoulders should be carefully looked after.

CHAPTER II.

ATTENTIONS TO THE CHILD AND MOTHER AFTER DELIVERY

As soon as the child is born, the covering should be raised at the foot of the bed, and the child placed on its side, at some distance from, and with its back to the vulva, in order that it may breathe freely, and not be suffocated with the discharge from the vagina.

The accoucheur should then ascertain that the uterus contracts properly, and that it does not contain a second foetus;* the woman is then to be covered, and requires for the moment no other care, but should be left to the delightful emotions which she must necessarily experience.

§ 1. *The Sex of the Child should not be immediately told.*

The accoucheur is generally urgently solicited to tell the sex of the infant, but he should be careful not to comply with the request, but should dissemble the matter, even to the assistants, for fear of indiscretion; for the joy which the mother would experience if her wishes were realized, would be as dangerous as the chagrin occasioned by disappointment.

She should not be informed of the sex of her child until she has somewhat recovered from her fatigue.

§ 2. *Tying the Cord.*

If the child be healthy, if it cry, and the respiration be well established, we should see that the base of the cord does not contain any portion of the intestine, and then a ligature should be applied two or three fingers' breadth from the umbilicus, in order that the integuments, which extend some lines on the cord, may not be included in the ligature; the ligature should be drawn sufficiently tight to obliterate completely the vessels, especially if the cord be much infiltrated. It is, indeed, proper, in this latter case, before applying the ligature, to press out with the fingers the lymph it contains; for, without this precaution, after the spontaneous evacuation of the fluid, the ligature would no longer compress sufficiently the vessels, and the blood might escape through the arteries, and endanger the life of the child. The cord is afterward to be cut with the scissors.

M. P. Dubois recommends to apply two ligatures, and make the section between them; I usually adopt this rule.† It has the

* There is no direction more important for the accoucheur scrupulously to observe than the one here indicated. As soon as the child is delivered, before separating it from its mother, he should place one hand on the abdomen to ascertain *the condition of the uterus; whether it contracts, and is converted into a hard tumour occupying the hypogastric region, or whether it remains in a state of inertia, filling up more or less the abdominal cavity.* In the former case, the accoucheur feels secure against *hemorrhage*; and, in the latter, he is admonished sufficiently early of the danger to which the woman is exposed from inevitable flooding to enable him to apply the proper remedies to induce uterine contraction, and thus rescue his patient. How many women have perished from the neglect of this simple, yet most important rule! The accoucheur, for example, heedless of the condition of the uterus, attends to the child; cuts the cord, applies the ligature; walks to the fireplace, sits down, and enters into familiar conversation with the nurse. In the course of a few minutes he approaches the bed of his patient; he is terrified at the change! She has the pallor of death on her countenance—pulseless—speechless—moribund! *She has flooded to death!* This is not a heightened picture. It is one, however, of fearful contemplation. We shall again allude to this topic.—Ed.

† Under ordinary circumstances, there is no necessity for two ligatures. I am in the habit of applying only *one*; and I think there is much advantage derived from this practice. In allowing the placental extremity of the cord to be free, there is an escape of blood, which, in my judgment, facilitates the expulsion of the after-birth, in consequence of the disgorgement which this escape of blood occasions in it. As for the objection urged by M. P. Dubois, that the blood will soil the bed, &c., this is of little moment, for the bed is already soiled. Even in twin cases, two ligatures are not always necessary, for usually there is no vascular connexion between the two placentas.—Ed.

advantage of avoiding, at the time the cord is cut, the abundant effusion of blood on the bed, &c.; and if, in multiple pregnancy, the presence of a second child has not been recognised, this additional ligature on the placental portion of the cord will prevent hemorrhage, which would often prove fatal to the second child. There sometimes exist between the two placentas vascular communications, through which the blood, passing from one placenta to the other, might escape externally by the cord of the first child.

Some accoucheurs are in the habit of dividing the cord before tying it; this practice I reserve for cases in which the life of the infant is in danger.

It has been asked, whether the ligature on the cord is indispensable, and if, after the regular establishment of respiration, the circulation in the vessels is not arrested? It is true that, in a great number of cases, such is the fact; but as experience has shown that hemorrhages fatal to the child have occurred where the cord has not been tied, it is our duty never to omit this precaution.

Such is the course I am in the habit of pursuing when the infant is healthy; but if I have the slightest fear of its life, I immediately cut the cord seven or eight fingers' breadth from the abdomen, and compress the extremity with the thumb and index finger; the child is then removed to a table prepared for this purpose near a window, which I cause to be opened. In order that I may carry the child properly in this case, I place the thumb and index finger which compress the cord between the upper portion of the thighs, the three other fingers support the breech, while with the other hand I support the shoulders and head; I then proceed actively to administer to the infant all necessary attention.

ART. I.—APOPLEXY OF THE NEWBORN INFANT.

Frequently, after a long and tedious labour, the infant is born apoplectic; the surface of the body is swollen, the face bluish, and there is an absence of all motion; the limbs are flexible, and the body preserves its heat; the pulsations of the cord and heart are obscure, and even imperceptible. The first indication, in this case, is to remove the engorgement from the brain and lungs. For this purpose, a few teaspoonfuls of blood should be allowed to escape from the extremity of the cord. Often, in order to determine this escape, it will be necessary to make several successive sections of the end of the cord. Hence the utility of dividing it at first seven or eight fingers' breadth from the umbilicus. At the same time, the posterior fauces should be cleared of the mucosities, either with the little finger, or with the feathers of a quill prepared for this purpose. During these operations, the infant should be exposed naked to the action of the air. The respiration is thus established, and the blue aspect of the body is succeeded by a rosy tint.

ART. II.—ASPHYXIA.

Extreme paleness of the surface, flaccidity and softness of the flesh, absence of respiration especially, and general coldness, with,

however, persistence of the pulsations of the heart, characterize asphyxia. This accident manifests itself in a child born weak or before term, and after manual or prolonged deliveries. In this case, we must be careful not to allow any blood to escape by the cord, and a temporary ligature should be immediately applied. The window before which the infant is placed should be wide open; and the head, face, and chest of the child exposed, in order that they may receive the direct impression of the air; all the other parts of the body must be enveloped in warm cloths, which should be frequently renewed. Frictions should be made on the chest with the hand, or a piece of linen or flannel saturated with cold vinegar and water, or brandy; a few drops of ether may be placed on the chest, while with the other hand the nose and throat may be gently irritated by means of a feather, and any mucus which may have collected removed. Percussion with the hand on the breech is likewise useful, and the blows may be given with some little force. Desormeaux has also suggested a means, from which I have derived great advantage: it consists in throwing, with a brisk movement, from the mouth a jet of brandy on the chest of the child. While these different remedies are being administered, a small lavement may be given; and a bath is to be prepared, into which the child should be plunged as soon as it begins to make a few inspirations. Frequently, a few minutes will suffice to restore the child to life; but sometimes it becomes necessary to persist for a long time in the use of these remedies; we should not relax, but, on the contrary, persevere in our attempts, with renewed energy, for some children are not resuscitated until an hour or two of well-directed effort. It is especially in this case that insufflation is indicated, either by direct means, the mouth of the accoucheur being applied over the mouth of the infant, or through the agency of Chaussier's laryngeal tube. I have frequently succeeded in this way; and frequently, too, entirely failed.

This operation requires a certain degree of skill, and it should be performed with great precaution, for a too rapid or prolonged insufflation may rupture the pulmonary vesicles.

The following is the mode of proceeding:

The extremity of the tube should be introduced into the larynx with the right hand, the left being employed in giving proper direction to it through the anterior wall of the neck; then the two angles of the mouth are to be closed, in order to prevent the escape of air; a small quantity of air is now gently introduced, and pressure is to be made on the chest to simulate expiration. Finally, these attempts at insufflation and expiration must be renewed as often as may be deemed necessary.

It is rare for these two accidents, apoplexy and asphyxia, to manifest themselves separately; they are almost always combined. In this case, the various means of treatment suggested must be employed.

ART. III.—CONGENITAL WEAKNESS.

Children born before term, or after serious disease of the mother, require great attention; they should be enveloped in soft cotton, and exposed to a warm temperature. The best means of effecting the latter would be to place around them bottles of warm water, or, still better, to put them in a metallic cradle, to be surrounded by boiling water.

Instances are mentioned of children born extremely weak, and scarcely arrived at the period of viability, whose lives have been preserved by means of this species of incubation.

§ 1. *Dressing the Infant.*

Before dressing the infant, and after being assured that there is no malformation, the albuminous matter which ordinarily covers the surface of the body should be removed. To do this most effectually, the body should be lubricated with sweet oil, cerate, or fresh butter, and then wiped with a piece of linen; but, in order to leave no impurity, the child should be placed in warm soap-water, and properly washed.

This being done, the infant is then to be placed on warm linen spread on the knees of the nurse, who will carefully dry it.

The head must be covered, in the first place, with a cap of fine linen, and then with one of flannel; also a shirt of linen, open behind, and then a second and third of some warmer material, according to the temperature; these should be fastened with strings. In general, pins should not be used, for they may injure the child. Moreover, when the child cries without any known cause, the nurse is very apt to suppose that it is in consequence of a pin pricking it, and she is constantly undressing the infant.

Before finishing the toilet of the infant, the cord should be dressed with a linen compress, with a hole in the centre, through which the cord is to be drawn: the whole should be raised above the umbilicus. A second compress should be placed over the first; then there should be two or three turns of a bandage, to be fastened with a needle and thread: a loose dress is to be put on the infant, and it must be protected against cold. It should then be placed in the cradle on its side, and on no account laid on a sofa or arm-chair, for fear some one might sit on it. Infants have frequently been sacrificed in this way, and too much caution cannot be used.

As soon as the accoucheur has completed his duties to the infant, he should return to the mother, and give her his attention. In simple pregnancy, he will proceed to deliver the placenta; but if there should be a second infant in the uterus, he must first await its expulsion.

ART. IV.—NATURAL DELIVERY OF THE AFTER-BIRTH.

Immediately after the expulsion of the fœtus, the uterus, in virtue of its organic contractility of tissue, returns upon itself; the

cellular attachments which unite it to the placenta are broken, and this latter organ, separated, presents itself at the orifice of the womb. The neck of the uterus is short, soft, and unequal; it can be easily penetrated, but the internal orifice is more resisting. However, it is not necessary for the neck to become again effaced in order to afford a passage to the placenta; it opens readily, and the after-birth passes it in totality or in part, and enters the vagina; it is rarely found expelled out of the vulva. The placenta once delivered, the neck becomes firmer and increases in length, but it still dilates, to allow the coagula to pass. As a general rule, it is not until thirty days that it resumes its natural dimensions.

Should the delivery of the after-birth be left to the spontaneous efforts of nature, or should it always be aided? Experiments made by M. P. Dubois at La Clinique will enable us to decide this question without difficulty. If the expulsion of the placenta be committed to the uterine and vaginal contraction in a certain number of women, it will be observed that in very few it is expelled spontaneously, and with rapidity; but in the others, in whom the expulsion takes place, it requires a longer or shorter time—one, two, and even five to six hours after the birth of the child; that in some the expulsion does not take place at all; and that, generally, in these latter cases, artificial delivery, now become necessary, will be the more difficult in proportion to the delay, the retraction of the internal orifice becoming more and more energetic.

It results, from these facts, that the delivery should always be aided. From fifteen to twenty minutes after the birth of the child, the accoucheur should ascertain whether the patient has felt any pains, for these indicate the separation of the placenta; he then examines per vaginam, to discover whether this organ has reached the mouth of the womb, while, with the other hand placed on the abdomen, he assures himself of the condition of the uterus, whether it forms a globular body, and is hard in the right hypogastric region. If the separation has taken place, he proceeds at once to the extraction of the placenta. He envelops the cord with a piece of linen, in order to prevent its slipping from the fingers; he then places two or three folds of it around the index finger, and makes traction first in the direction of the axis of the superior strait; and afterward, in proportion as the placenta descends, he pulls in the direction of the axis of the inferior strait. During this time, he should take the precaution of placing the other hand on the fundus of the womb, in order to see that it is not drawn down, which would be likely to happen if the placenta were not completely detached.*

* The management of the placenta constitutes one of the most important duties of the accoucheur. As a general rule, the real dangers of parturition are directly connected more or less with the delivery of the after-birth. *Hemorrhage, inversion of the womb, prolapsus of this organ, laceration of the placenta, tearing away the umbilical cord*, are all so many accidents, most of them fearful in their consequences, resulting from the mismanagement of the placenta. Let the student, therefore, be on his guard, and not suppose that his duties are terminated, or that his patient's safety is secured by the mere delivery of the child. As I have remarked in a preceding note, as soon as the fœtus is expelled the accoucheur should place his hand on the abdomen of the mother to ascertain the condition of the uterus—*whether it is con-*

In proportion as the placenta presents at the vulva, the accoucheur should rotate it between the two hands, in order to form a cord of the membranes, and thus give them more consistence. Without this precaution, some portion of them may remain in the uterus, and occasion difficulties of which we shall speak hereafter.

If the separation has not been completed, he must wait; frictions are to be made on the uterus, and slight tractions on the cord. If, in the course of an hour, the separation should not have taken place, it would not be prudent to delay any longer, as much on account of the patient, as for fear the extraction of the after-birth should become more and more difficult. The hand should be introduced into the womb, in order to effect artificial delivery. (See *Artificial Delivery*.)

Immediately after the extraction of the placenta, it should be ascertained that it is entire, and that no portion of it or of the membranes remains in the uterus. Should this occur, the accoucheur should proceed at once to remove it.

tracted. If this be the case, he may remain easy, for there is no danger of hemorrhage. In ten, fifteen, or twenty minutes after the delivery of the child, the mother will complain of pains, simulating in their character labour-pains; these are nothing more than the contractions of the womb, which will speedily result in the separation of the placenta from its internal surface. The patient, especially if it be her first child, often becomes alarmed by these pains, supposing that she is again to encounter all the agony of childbirth. The accoucheur should, therefore, explain the nature of the pains, their object, &c. In proportion as the placenta becomes detached from the internal surface of the womb, there will be a slight discharge of blood, and this usually takes place immediately after the pain. The pains, therefore, together with the discharge of blood, will indicate that nature is engaged in detaching the placenta. When the patient has experienced several of these pains, and a discharge of blood has followed, and, *above all*, the accoucheur feels the uterus well contracted in the hypogastric region, he is then assured that the placenta is completely separated from the uterus, and if he introduce his finger, he will find it lying over the mouth of the womb, and sometimes projecting in part through this orifice. Under these circumstances, he can proceed to extract it as follows. The cord being enveloped with linen, he makes two or three twists of it around the fingers of the right hand, while he introduces the index finger of the other hand into the vagina, carrying it up to the mouth of the uterus; this finger then seizes the cord close to the after-birth, and makes traction downward and backward in the direction of the axis of the superior strait: when the placenta passes out of the womb and is in the vagina, the extraction is to be made in the line of the inferior strait, always remembering to withdraw the placenta by rotating it, in order that the membranes may be twisted into a cord, and not be left in the uterine cavity, which would often result seriously. As soon as the after-birth has come away, the accoucheur should carefully introduce his finger into the vagina, and remove any coagula of blood that may be there, and he should particularly ascertain whether there is a clot of blood *keeping the mouth of the womb open*; if so, it should be immediately removed. Should this coagulum be suffered to remain, hemorrhage will frequently be the result, and the patient, under any circumstances, will be exposed to much unnecessary suffering by the severe contractions of the uterus, occasioned by the presence of the coagulum.

When the placenta is still high up in the womb and not completely detached, *the accoucheur should not make traction on the cord*; for he will either lacerate the placenta or cord, or, if the adhesions between the placenta and womb be sufficient to resist the force of the traction, the womb itself will often be inverted. In this case, he should endeavour to stimulate the uterus to contractions by frictions on the abdomen. Should these not be sufficient to separate the after-birth, he must then have recourse to the artificial delivery of this organ, the rules for which will be given under the appropriate head.

As soon as the placenta has been removed, the accoucheur should have a bandage applied around the body of his patient. This bandage should consist of a fold of linen about fourteen inches wide, and sufficiently long to encircle the body. It should be applied without moving the patient, and should be placed next to the surface of the body. It should be drawn down well under the hips, and secured with pins; the pressure of the bandage must be gentle and uniform. Many fashionable women are in the habit of using variously-constructed corsets for this purpose: these corsets are usually stiff and unyielding, like the prejudices of their patrons, and often prove injurious.—Ed.

§ 1. *Delivery in case of Twins.*

I have already observed, and I now repeat it, that, in cases of twins, we should be careful not to remove the placenta of the first child until after the birth of the second. There almost always exist vascular communications between the placentas; and any tractions exerted on the first would almost certainly result in the premature separation of the other, which would expose both mother and child to the danger of hemorrhage.*

Finally, after the birth of the twins, in order to extract the after-births, we should make tractions on one of the cords, first on the one which offers the least resistance, and afterward on the other, before pulling upon both cords. In this way the placental mass descends by one of its extremities, and is more readily extracted.

§ 2. *Attentions to the Woman immediately after the Delivery of the Placenta.*

Immediately after the removal of the after-birth, the accoucheur should ascertain, by a vaginal and abdominal examination, that the fundus of the womb has not been drawn down by the placenta; for it should be remedied at once, by introducing into the uterus one hand, which would push up the inverted fundus; then frictions on the abdomen should be made, in order to facilitate the action of the uterus, which should form a hard tumour on the right side. This being done, the woman should be permitted to repose for about a quarter of an hour, in order that the blood, which the womb furnishes abundantly just after delivery, may be discharged. During this interval, articles necessary for her toilet should be prepared; the clothes and linen, as also her bed, should be well warmed, and a dry and warm fold of linen should be passed under her. The genital organs and upper portion of the thighs should then be gently and cautiously washed with a sponge wet with warm water, and afterward dried with soft, warm linen. The clean chemise should then be placed over the head of the patient, and she should be assisted in removing the other, without subjecting her to cold; then her ordinary nightgown should be furnished, and all the soiled clothes removed from her. All this should be done as much as possible under cover, and with due celerity. The patient should be protected with a light covering, and then removed to her bed, previously warmed: under no circumstances should she be permitted to walk to it. It will require more address than strength to transport the patient from one bed to another; and, in general, the accoucheur should charge himself with this duty. For this purpose, he should pass the right arm under the limbs of the patient, support the back with the left, and allow her to keep herself in a fixed position, by throwing her arms around his neck. She will thus be carried without difficulty, and placed on the bed prepared for her.

* Dr. Chailly is certainly wrong in the assertion that there almost always exist vascular connexions between the two placentas. Such, at all events is not the experience of other practitioners.—Ed.

ART. V.—ATTENTIONS NECESSARY TO THE PUERPERAL WOMAN AND INFANT.

The chamber of the parturient female should have a proper ventilation, and be of a moderate temperature; the labour-bed and soiled linen should be removed as soon as possible, and but little light admitted into the room.

§ 1. *The Accoucheur should not leave the Patient immediately after her Delivery.*

Soon after the patient has been put into her bed, she sometimes experiences inexpressible comfort; at other times she is attacked with a chill and chattering of the teeth; but this chill is ordinarily of short duration, and she has a desire to sleep.

Whether she sleeps or not, the accoucheur should remain for some time with his patient after the birth of her child. He should examine carefully the pulse, and condition of the uterus. Some women, left to themselves, have been attacked with serious hemorrhage during their sleep, and have passed from sleep to death; others, taken with flooding at the moment the accoucheur left them, have expired before it was possible to recall him. Therefore, the patient should not be committed to the charge of the nurse until after the lapse of two hours.

§ 2. *Regimen.*

If the patient complain of hunger, she may take some warm broth; she should be advised to avoid all emotions, either sad or gay; and no one should be permitted to visit her except her immediate family, and the visits of these should be short. The most absolute quiet should be observed by the nurse. For drink, sugar and water, the infusion of linden, and orange leaf, and sirup of gum, &c., may be prescribed. Finally, after being assured that the patient does not flow, and having given general directions, the accoucheur may retire.

During the first five or six hours which succeed the delivery, the pulse, from being corded and frequent as it was, becomes soft and full; the skin is soft and humid, and there escapes from the womb blood sufficient to soil three or four napkins.

§ 3. *First Visit of the Accoucheur.*

At his first visit, which should be made as early as possible, the accoucheur should inquire whether his patient has urinated, and he should examine the chamber for himself, in order that he may see the quantity. Frequently the pressure exerted upon the bladder and urethra, during the passage of the head, renders the emission of water difficult, and sometimes impossible; the catheter then becomes necessary.

It has very often happened that accoucheurs, having neglected to inform themselves whether or not the urine has been voided, have supposed the pains caused by the retention of urine, and which

would have ceased at once if the catheter had been introduced, to be the commencement of peritonitis, or inflammation of the womb, and leeches, bleeding, baths, cataplasms, &c., have been directed. Happy, indeed, if the error is soon discovered; for women, through an inconceivable ignorance of their medical attendants, have been known to succumb with the most excruciating suffering, and all owing to extreme distension of the bladder. It is proper to remark that death, in this case, is occasioned by gangrene of the bladder, or rupture of this organ, which is followed by a most frightful peritonitis; this latter accident has been more than once mistaken for rupture of the womb.

It must not be supposed that this is a heightened picture; these retentions of urine after labour are sufficiently frequent; and during the fourteen years I have been in practice, I have been more than once called to administer in similar cases. In one instance, I was called to a lady who had been attended by an excellent practitioner, but who was a stranger to these important little details, which persons alone remember who are constantly in the habit of attending the lying-in chamber.

The merited consideration which this honourable confrère enjoyed in other respects rendered my position very embarrassing, for I was aware that, on introducing the catheter, I should at once remove all the alarming symptoms, and deprive my honourable compeer of the reputation of the cure. I therefore approved of all that had been done, leeches, &c., &c., and assured the friends that the remedies employed had brought the disease to that point that it could be subdued almost instantly; but I observed to my confrère that I thought the catheter should be used. This was a ray of light to him. I retired; the patient was removed from the bath in which she was when I was called, the catheter was immediately introduced, and the cure was as prompt as I had promised. I have often heard M. P. Dubois relate analogous cases.

§ 4. *General Examination of the Patient.*

After being satisfied that the urine has been voided, the accoucheur should examine the napkins that have been soiled; he should ascertain the condition of the abdomen by placing his hand under the bedclothes, and without in any way exposing the patient; he should press lightly on each iliac region, and if there should be no tenderness, he will have no cause for uneasiness; the state of the pulse will be an excellent guide in this case, for there is always frequency of the pulse with the commencement of peritoneal inflammation.

§ 5. *Prescriptions.*

Ablutions with warm water, or with an infusion of chervil, should be recommended two or three times a day; but great care should be taken not to expose the patient. Whenever she desires to pass her urine or fæces, a bed pan must be used. The most absolute repose should be again enjoined; the bed of the patient

should not be disturbed, and an interdict put upon visitors; the mother and husband alone should be admitted, and these but for a short time. The patient requires the most complete silence and repose, and she should be alone with the nurse.

§ 6. *Examination of the Infant.*

The accoucheur should inform himself as to the state of the child, whether the meconium and urine have been expelled; if necessary, the evacuation of the intestines may be aided by a little sugar and water, in which may be put a teaspoonful of the sirup of rhubarb; or small lavements may be administered. If the mother nurses her child, all these means will be unnecessary, for the colostrum, or first milk, will be sufficient to open the bowels of the infant. I am in the habit of having it put to the breast as soon as the patient has had a few hours' repose. Some accoucheurs recommend to wait until the milk fever; I do not concur in this opinion; for the child has, at this period, difficulty of seizing the nipple, which is effaced by the tension of the breasts; and, moreover, the artificial feeding, to which recourse must be had, does more or less injury to the child.

§ 7. *Death of the Infant from Starvation.*

Some infants, after their birth, do not exhibit the slightest desire for food; they sleep continually, will not suck the finger when put into their mouth, nor will they take the breast. If it should be supposed, from this, that the child does not need nourishment, and proper care be not taken to awake it from this lethargic sleep, fatal consequences will soon ensue. It will be necessary to place the child before the fire, and use frictions over the whole surface of its body, and apply small mustard sinapisms to the feet; warm milk with sugar and water should be given by the mouth. I have seen children who, without these precautions, would have died of absolute starvation.

§ 8. *First and Second Day of lying in.*

During the first and second day, the bowels of the patient will not require any attention, unless they should not have been evacuated before the labour; in this case, it will suffice to administer a simple lavement. The nourishment should consist of gruel, toast-water, tea, &c. Until after the milk fever, the patient should be visited twice a day.

After-pains.

The accoucheur should not confound a physiological result, the after-pains, with that morbid distress which announces the invasion of inflammation; the after-pains are not accompanied with fever, and are intermittent. They result from the effort made by the uterus to discharge the coagula it contains, and press out the blood still in its walls; and, during these contractions, the accou-

cheur can feel, through the abdominal parietes, the uterus, which forms a round tumour. The patient will be conscious that a small quantity of blood flows at each contraction. The after-pains, more frequent and intense in women who have had children than in primiparæ, who, indeed, are often exempt from them, commence most generally after the expulsion of the after-birth; at first, feeble and rare, they become more frequent, and cease during the milk fever; but sometimes they are reproduced afterward. It is unusual, however, for them to continue during the first eight or nine days. These pains are sometimes so severe as to require interference on the part of the accoucheur. The application of a flax-seed poultice to the abdomen and vulva will be found useful, should there be no disposition to hemorrhage; in the latter case, lotions of laudanum to the lower portion of the abdomen, or 10, 15, to 20 drops in lavement should be administered.* Should the uterus be of more than usual volume, and the pains appear to be occasioned by coagula of blood, an attempt should be made to remove them with the finger; and if this is impracticable, ergot should be administered, as recommended by M. Velpeau.

b. *Lochiæ.*

The term lochia is applied to the discharge which takes place from the vagina from delivery until the restoration of the womb to its normal volume. Immediately after the removal of the placenta and the flow of blood which accompanies it, a small quantity of pure blood escapes from the uterus. After twelve or fifteen hours, the blood loses its consistence, its colour becomes lighter, and there is merely a discharge of sanguineous serum; but usually all discharge ceases during the milk fever. As soon as this is terminated, the lochiæ reappear, but they are of a yellowish-white colour. The duration of this discharge is sometimes fifteen days, three weeks, or a month; sometimes even, in women who do not nurse, and only in such, it will continue for six weeks, or even longer. The lochia is also more abundant in the latter

* Many patients object to enemata, and the indication can, in my judgment, be as well, if not more effectually met, by the administration of a calming potion by the mouth. I am in the habit, when the after-pains are severe, of ordering the following mixture, which will scarcely ever fail in producing the desired effect:

℞ Sirup Papav., ʒij.
Mucil. Acaciæ, ʒij.
Sol. Sulph. Morphicæ, gtt. x.
Ft. mist.

One half to be given, and if the suffering is not allayed, the remaining half in two hours.

Also, instead of having recourse to enemata for the purpose of relaxing the bowels, I would recommend, on the third day after delivery, the administration of castor oil or magnesia. If these should be objectionable, the common black draught will be found useful.

℞ Infus. Sennæ, ʒijss.
Sulphat. Magnesicæ, ʒijss.
Mannæ, ʒij.
Tinct. Jalapæ, ʒi.
Ft. haust.

This prescription has been long in favour, and will generally be found to answer the purpose.—Ed

than in those who nurse their children. Frequently the sanguineous discharge continues much longer than the ordinary period, and is often reproduced after having ceased, when the patients leave their beds too soon after delivery. However, it must be remarked that, in almost all women, this discharge often assumes a reddish hue the first time they attempt to leave their bed, even after the fifteenth day; lactation diminishes both its duration and quantity. In consequence of the changes which this discharge undergoes, the lochia is distinguished by the names of sanguineous, and serous, or puriform; it has an odour *sui generis*, which varies according to the patient. When it becomes fetid, no matter what the cause may be, weak aromatic injections with chamomile should be prescribed, and the parts frequently bathed.

The abundance of this discharge varies very much during the first twenty-four hours; women soil, ordinarily, from eight to ten napkins, and this number diminishes every day.*

c. *Milk Fever.*

The milk fever generally appears between the fortieth and sixtieth hour. The breasts become tumid and hard, the subcutaneous veins are engorged, and the patient is troubled, more or less, with cephalalgia; the skin is hot and dry at first, and then abundant perspiration ensues; the pulse, at first small and corded, soon becomes full and soft; the tongue is slightly coated, and the face flushed.

Rarely, a slight chill precedes the invasion of this fever; the breasts swell more and more; the patient cannot bring her arms to her body; but, at the end of twenty-four or thirty-six hours, all these symptoms disappear.

The accoucheur, during this period, should watch the patient with great attention, and see that his directions are strictly enforced. The chest should be covered with a handkerchief of thick muslin; and, for fear of cold, all ablutions and lavements should be dispensed with, unless especially indicated.

The patient must be put upon rigid diet. The milk fever is often very light in women who nurse; it sometimes even does not make its appearance.

§ 9. *Regimen after the Milk Fever.*

The fever once passed, nourishment may be allowed. However, if the breasts continue engorged, broths alone should be given;

* The lochial discharge is sometimes very small in quantity; at other times it becomes arrested, and continues so for several days; and this circumstance, especially in plethoric women, may lead to serious consequences if neglected by the accoucheur. In either case, when the lochial discharge is slight, or arrested beyond the period of the milk fever, I usually order warm flaxseed poultices, containing about 3ij of powdered camphor, to be placed over the vulva and lower portion of the abdomen. The poultices should be renewed as soon as they lose their heat, and should be continued until the return of the discharge, which usually will take place after one or two applications of these cataplasms. They will be found admirably adapted to such cases. If, however, the discharge should not return, and there should be fulness of the head, or congestion elsewhere, it will be proper to abstract blood from the arm, &c.—ED.

a gentle laxative, either by the mouth or in lavement, may also become necessary.

The quantity of food may be cautiously increased, but it should be of easy digestion. The twelfth or eighteenth day the patient may begin to indulge in her ordinary diet.

a. *Separation of the Cord.*

In general, the cord separates and falls off about the fourth or fifth day, although it may happen before or after this period. The accoucheur should examine the umbilicus with attention; if it suppurates after the separation of the cord, a compress, smeared with cerate or fresh butter, should be applied until the tenth or twelfth day, when the cicatrization is complete, and the compress should be kept in place by a bandage drawn sufficiently tight. Should there be an exomphalos, graduated compresses, or a cotton pad of proper resistance, should be put under the bandage.

b. *Making the Bed.*

The bed of the patient should not be made until after the milk fever, and then this should be done every day; the patient should be placed in another bed, where she should remain until her own is properly prepared. From the ninth to the fifteenth day, and not before, due regard being had to the temperature and the different circumstances of the patient, she may be permitted to sit in an arm-chair for an hour or two for two or three consecutive days, after which she may gradually attempt to walk about her room.

§ 10. *First Going out of the Patient.*

She should not venture out until between the twentieth and thirtieth day, especially in winter. Indeed, it would be more prudent, in this case, to postpone it until the end of six weeks. She should not be permitted to go to church too soon to return thanks to God for her happy delivery; for, generally, the temperature is cold and humid, even in summer, and the patient would be exposed to serious danger.

11. *Attention to the Bowels of the Patient.*

Each day, after the milk fever, the patient should have a lavement administered. If simple water is insufficient, a small quantity of mercurialized honey may be added to it. If this should not take effect, some castor oil, either in warm herb or chicken broth, may be given; I like this mode of administering the oil. In the first place, the oil itself is gentle, and, in the majority of cases, purges without producing pain, and never occasions excessive action; secondly, given in very warm broth—as warm, indeed, as it can be taken—it loses much of its disagreeable taste, which is not the case when mixed, as is generally advised, with lemon sirup.

§ 12. *Specifics to prevent Milky Deposites.*

Some females believe in milky deposite, and have an extreme

dread of them; they are in the habit of asking the accoucheur for some specific, and also for purgative medicine. Unless there should be some contra-indication, laxatives should be allowed; they cannot but prove useful; and, moreover, if denied by the accoucheur, he will be blamed for any disease that may occur for fifty years afterward, for it certainly will be attributed to his obstinacy. Castor oil or seidlitz powders I prefer in such cases.

COMPLICATIONS WHICH MAY MANIFEST THEMSELVES DURING THE PERIOD OF ACCOUCHEMENT, WHEN THE VERTEX PRESENTS.

In most cases, delivery is a natural function, capable of being accomplished by the resources of the organism. The accoucheur is then but a simple spectator of the parturient process; but a multitude of circumstances may occur to impede the progress of delivery, render it dangerous, or altogether impossible. It then becomes necessary to aid nature, and rescue the mother and child from the dangers with which they are menaced.

In the enumeration of these complications, I will not pursue the plan usually adopted, but will arrange them as nearly as possible in reference to the difficulties they may occasion, and to the operations which may become necessary from the commencement to the termination of the labour. I will likewise indicate, after each complication, the necessary treatment, reserving what I shall have to say of version, the forceps, &c., &c. Moreover, the indications and the manner of operating not being the same in all the presentations, I shall arrange them, first, in reference to the presentation of the vertex, then of the face, pelvic extremity, and trunk.

CHAPTER I.

COMPLICATIONS WHICH MAY RETARD OR PREVENT LABOUR.

ART. I.—INEFFICIENT CONTRACTIONS—INERTIA OF THE UTERUS.

INEFFICIENT uterine contraction manifests itself especially in women of frail constitution, and who have been debilitated by serious disease. In these, the contractions are not only feeble, but of very short duration; they do not *tell*, as is vulgarly said. The dilatation of the orifice of the womb is slow, and the membranous sac makes but little pressure upon it. If the membranes are ruptured, the head scarcely rests on the orifice.

The accoucheur should, as far as possible, support the strength of the patient by slight tonics, wine, &c.; and if these means are insufficient, ergot should be administered, but only when the dilatation is nearly completed.

§ 1. *Debility peculiar to the Uterus.*

The debility peculiar to the uterus, although the constitution of the patient is otherwise good, may likewise determine the same phenomena. Frequently the whole energy of the uterus is exhausted at the commencement of labour in producing powerful contractions; these contractions soon lose their intensity, and cease altogether.

It then becomes necessary to apply frictions to the abdomen, titillate the neck of the uterus, recommend the patient to walk about the room, and administer ergot.

Ergot.

Ergot should be pulverized at the moment it is to be used, otherwise it loses its virtues.

This medicament possesses the property of increasing and exciting uterine contraction; no one at the present day seems to doubt this fact. But it is not so generally admitted that it is capable of determining these contractions before they have manifested themselves. For myself, I believe it can bring on contractions at any time, but more particularly at an advanced period of pregnancy.* I have never administered it previous to the occurrence of uterine contraction, until after the period of foetal viability, and in no instance, in these cases, have I known it to fail.

Besides its efficacy in inertia uteri, ergot possesses certain hemostatic properties, which render it of great value in uterine hemorrhages. In this case, it acts on the proper organic contractility of the tissue of the uterus; while, in the former case, it awakens and develops the organic contraction.

The contractions which it determines differ somewhat from the natural contractions, which circumstance enables us to distinguish whether or not the return of the pains is due to the action of the ergot. They usually manifest themselves ten or fifteen minutes after the administration of the medicine, and their effects continue about an hour and a half. They are permanent, progress by exacerbation, and there is no perfect calm between them, as in the natural contractions; the uterus continues constantly contracted upon the foetus. These contractions resemble very much certain morbid contractions, to which I shall allude presently; they are also fatiguing to the patient, but very different in their results, for they determine the labour, while the morbid contractions have no influence upon it.

This permanent uterine effort is sometimes followed by serious inconveniences to the child. Some accoucheurs, supposing that ergot may cause the death of the infant, have abandoned its use.

It is unfortunately true that this medicine is very much abused.

* A dwarf, of whom I shall speak more particularly hereafter, and whom M. P. Dubois was obliged to deliver the first time with forceps, became again pregnant. In order to avoid an operation, he resolved to bring on premature delivery. Ergot was administered before any pain had commenced, at about the eighth month, and regular labour soon followed.

I have often seen it administered in cases in which it was entirely useless; and in some instances in which I have been called to change an unnatural presentation, I have found the fœtus dead, and the uterus so contracted upon itself, that the version was extremely difficult; and all this simply because, mistaking the indication, ergot had been administered, instead of changing the presentation, as should have been done.

This abuse, and these unfortunate results, have contributed to throw discredit upon this medicine in the minds of many respectable practitioners; but should we deprive ourselves of a precious remedy because, when improperly prescribed, it is followed by serious inconvenience? Certainly not.

I shall now mention the circumstances which, according to M. P. Dubois, will justify or contra-indicate the use of ergot.

It should not be given, during labour, in case of feeble uterine contractions or of complete inertia of the womb, except when the pelvis is well formed, the head of the fœtus has its natural dimensions, and the presentation such as to admit of spontaneous delivery. Thus, it should not be given in presentations of the trunk, or where there is any serious difficulty about the neck of the womb, either in consequence of a morbid condition or want of dilatation; nor should it be prescribed until after the rupture of the membranes, and the proper dilatation or dilatibility of the neck. Care should likewise be taken not to administer it when the head is in the pelvic cavity, or at the vulva, and when the fœtus is in danger. It is necessary, under these circumstances, to have recourse to the forceps.

It should not, if possible, be given to women with their first children, for fear of a too rapid delivery; which might endanger the perineum; nor to nervous and very irritable women, nor to those who are labouring under symptoms of congestion or plethora, or whose uterine sensibility is very much heightened, and who are disposed to inflammation.

Ergot is most generally administered in powder mixed in a small glass of sugar and water; the dose is one drachm divided into three parts, which are to be taken at an interval of ten minutes, depending upon the effects produced. It has also been given in decoction, infusion, tincture, &c.; but, as its action is the more efficacious in proportion as it is more recently pulverized, it is better to administer it in powder.

Ergot, no matter in what form it may be given, is frequently thrown off the stomach. In this case, it should be administered in enemata; and it is thus more rapidly absorbed than by the stomach, and acts more directly upon the uterus. Hence, care must be taken not to increase the dose.*

* Our author's remarks on ergot, and the indications for its employment, are most excellent; let them be attentively considered. The abuse of this agent has given rise in our country to the most fearful results. Both mother and child have frequently been sacrificed by the *improper* administration of this drug. I have now in my museum two *ruptured wombs* taken from women to whom ergot had been given, and on whom attempts at version had been made!! I was called to one of these cases about six months since; I found the unfor-

§ 2. *Plethora.*

General or local plethora may also diminish or suspend the pains ; bloodletting is indicated in this case.

§ 3. *Moral Impressions.*

Strong moral impressions, occasioned by the presence of persons who are displeasing, the presence of an accoucheur different from the one expected, &c., may produce similar effects. It is the same with regard to any severe pain, foreign from uterine contraction ; no matter what the cause may be, the accoucheur should endeavour to ascertain it, and, if possible, remove it.

§ 4. *Death of the Infant.*

The death of the infant does not influence the contractions of the womb, as some accoucheurs have supposed. The expulsion of an infant, after it has ceased to live, takes place sometimes, it is true, slowly ; at other times, art is obliged to interfere in order to promote its delivery. But it must not be supposed that the death of the infant occasions these obstacles ; for if the woman and uterus are endowed with sufficient energy, the expulsion will take place as rapidly as if the child were living ; and when the delivery is protracted after the death of the infant, it does not depend on want of action in the fœtus, but rather because that the same causes that have determined its death have also influenced the constitution of the mother, and the energy of the uterus.

§ 5. *Extreme Distension of the Uterus.*

The extreme distension of the uterus, whether it be occasioned by the presence of several fœtuses, or by an excessive accumulation of fluid, may also induce debility—a suspension or complete cessation of the pains. In fact, in ordinary cases, the ovum is not entirely filled with amniotic fluid, and the uterus is not distended ; thus, before the rupture of the membranes, it can press upon the fœtus, and cause a portion of it to descend into the orifice. When, on the contrary, this organ has been forced to distend itself beyond its ordinary limits in consequence of the abnormal increase of the ovum, it loses, in part, its contractile property. This difficulty may be remedied by rupturing the membranes, thus affording escape to a portion of the liquor amnii. The uterus then finds itself

tunate woman moribund ; about two hours before I saw her, she had been attacked with vomiting. When I arrived she was nearly pulseless and speechless, with pallor of countenance, cold extremities, and a clammy perspiration. This woman had been in labour about twenty hours, and the above symptoms manifested themselves about two hours before my arrival. In looking at the woman, I pronounced it to be a case of ruptured womb, and stated at the time that she must die. The physician in attendance did not concur in either of these opinions. Nothing could be done in the case. The poor creature sunk before we left the house ; a post-mortem examination was requested, but refused. At 11 o'clock the same evening the husband came for me, and said he was willing that the examination should be made. Dr. Busted accompanied me, and the autopsy revealed the truth of the previous opinion ; the womb was lacerated to the extent of six inches in its left lateral wall, and the child had been thrown into the abdomen ! This was one of the beautiful results of the improper use of ergot, followed by attempts at *forced version*.—ED.

in a natural condition, and its organic contractility is then freely exercised.

§ 6. *Resistance of the Membranes.*

The membranes are occasionally so thick and resisting that the energetic and continued contractions of the womb cannot easily rupture them, although the dilatation may have been complete for some time, and the membranous sac project into the vagina. If the accoucheur does not interfere in this case, the rupture of the sac may be delayed for a considerable period; sometimes even the contractions will be altogether insufficient to produce it. The uterus then falls into a state of inertia, and it becomes necessary to rupture the sac artificially.

§ 7. *Rupture of the Membranes.*

After having ascertained that the dilatation is complete, that the presentation is favourable, and that there is no other mechanical obstacle than the resistance of the membranes, it becomes the duty of the accoucheur to rupture them. For this purpose, he should select the moment of a strong contraction; and while the sac is projected forward, he should push against it the extremity of the index finger; this will frequently suffice; but it sometimes becomes necessary to lacerate the membranes with the finger nail, in order to weaken them, and even occasionally to employ a pointed instrument; an ordinary pen, for example, will answer the purpose. It must be introduced on the index finger as far as the sac; then, at the moment of a contraction, it should be slightly pushed with the other hand, and the sac is thus penetrated without difficulty. The pen is the instrument which, of all others, should be preferred; it is flexible and harmless. It will sometimes be proper to curve it, in order to reach the membranes more readily.

I have stated, as a principle, that the membranes should not be ruptured until the dilatation is complete; because, if done earlier, the neck of the womb, not yet dilated, could not give passage to the fœtus. The amniotic fluid having passed off, the contractions necessary to achieve this dilatation will be exerted directly upon the fœtus, which, no longer protected by the fluid, is exposed, until the dilatation is completed, to the contractile efforts of the uterus, and may be destroyed by this compression.

But there are exceptions to this rule: thus, when the neck, without being entirely dilated, is effaced, soft, and dilatable, if the rupture becomes necessary in order to facilitate delivery, it may be accomplished without danger to the fœtus. The inconveniences of this premature rupture, whether performed by the accoucheur or by the efforts of nature, have been much exaggerated. For, in most of the cases in which the rupture is necessary, the head of the fœtus fills up so exactly the orifice, that, in general, but a small quantity of the fluid escapes; and, indeed, we are often obliged to promote its discharge in order to increase the uterine action. With this view, but only when the dilatation is nearly complete,

the head should be gently raised above the orifice, and, in proportion as the fluid escapes, the contractions become stronger.

Rigidity of the neck of the uterus, its obliquity and agglutination the resistance of the perineum, the deformities of the pelvis and fœtus, and unnatural presentations, are so many circumstances capable indirectly of retarding labour, and enfeebling the contractions. In these cases, the uterus contracts, at first, with more or less energy; then, fatigued, as it were, by repeated efforts against obstacles it cannot overcome, it becomes exhausted, the contractions grow gradually more feeble, and finally cease altogether. I should therefore, perhaps, treat of these complications in this place, but as they constitute by themselves obstacles to the expulsion of the fœtus, a special chapter will be devoted to them.

Finally, whatever may be the cause of the inertia, if the means recommended do not excite uterine contraction, the fœtus must be delivered by the feet (turning), if the head be situated at the superior strait; or the forceps should be used if the contractions at the commencement of labour have brought the head into the cavity, and inertia has supervened after this descent. (See forceps, *turning*, at the end of this article.)

ART. II.—IRREGULAR OR MORBID CONTRACTIONS.

The organic contractility of the uterus is subject to irregularities in its mode of action, and to a particular state of exacerbation, which it is important to note. The uterus, as may be seen in the diagrams in this work, is composed of several fibrous plexuses and muscular fasciculi, which constitute distinct and veritable muscles. In natural labour, all these muscles contract at once, and act upon the fœtus, and the result of this contraction is a lively pain, soon followed by a perfect calm. If, on the contrary, the different muscles contract one after the other, there results from this circumstance a series of alternate contractions extremely painful and fatiguing, and very irregular in the mode and intervals of their production. The hand, applied to the abdomen, soon ascertains, by the irregularities of the surface of the uterus, the hardness of certain points, and the softness of others, that the contractions are partial, and that the fœtus, tossed about by these alternate contractions, instead of descending by the combined action of all the muscles of the organ, advances with great slowness, and most frequently makes no progress.

At other times the pains are continuous. In this case, all the portions of the organ contract simultaneously, and although this contraction may determine the descent of the fœtus, yet the impulse it receives is not in relation with the violence of the pain. In both cases, the patient is extremely agitated, and becomes truly despondent; the pulse is frequent and hard; the skin hot; the face flushed; all the muscles of the body appear to participate in the contraction of the uterus; the mind even becomes somewhat affected. Finally, if this peculiar condition of the womb, to which

the name of uterine tetanus has been given, be not controlled, it will soon be followed by convulsions—puerperal eclampsia.

In this case, proper treatment is most frequently followed by happy results ; it terminates the anguish to which the woman has been exposed, and prevents the fatal consequences which might otherwise ensue.

The treatment consists, in general, of bloodletting, baths, and narcotics, according to the temperament of the patient. If she be plethoric, bleeding will sometimes suffice alone ; but if, in ten or fifteen minutes after the abstraction of blood, the sedative effect expected from it be not manifested, recourse must be had to opiates. If nervous and irritable, baths, and especially narcotics, should be employed. An enema, consisting of fifteen drops of the laudanum of Sydenham in only a wine-glass of water, in order that it may be the more easily retained, should be administered ; the patient should then be put into a bath ; and if, on leaving the bath, the effect is not produced, small enemata should be given every quarter of an hour, with the addition of fifteen drops of laudanum in each. The quantity of laudanum, however, should not exceed sixty to eighty drops.

In general, a few minutes after the first enema, the pains begin to diminish. The extreme agitation she has suffered is succeeded by perfect tranquillity, during which the patient falls into refreshing sleep ; after this, the pains recommence, but they are regular, and are followed by intervals of rest. The patient recovers her energy and courage, and the labour makes rapid progress.

I have frequently, both in city and hospital practice, had occasion to employ this treatment, and I have always found it successful. M. P. Dubois was the first practitioner I ever knew have recourse to it.

ART. III.—EXHAUSTION.

Exhaustion may occur at any period of labour ; attempts should be made to strengthen the patient by tonics, but these means are frequently unavailing, when the exhaustion is in consequence of antecedent disease, or of excessive fatigue. The accoucheur must then extract the fœtus ; by turning, if the head is yet at the superior strait ; by the forceps, if it has descended, and delivery by turning is impracticable.

ART. IV.—UTERINE RHEUMATISM.

Uterine rheumatism is also an obstacle to the regular accomplishment of parturition ; sometimes, even, it renders delivery impossible without the interference of art.

The symptoms of this affection are nearly the same as those of the morbid contractions ; each contraction is not separated by a distinct interval ; the contraction, when it manifests itself, is nothing more than the exacerbation of a pain, which has not ceased ; moreover, each of these exacerbations is distressing to the woman during its entire duration. The pain resides in the uterine contraction.

while, in the natural contraction, the pain is not felt at the commencement; it is perceived only at the moment the effort of the body of the uterus is communicated to the neck.

In uterine rheumatism, the pain does not commence at the fundus of the organ, as is the case in the normal contraction; but it is felt at first at the point in which the patient habitually suffers, and thence it extends to the neck.

The violence of the pains is sometimes so great in this malady that the contraction is suddenly arrested, and is replaced by permanent pain, which exerts no influence whatever on the progress of the labour; for fear of increasing her sufferings, the woman avoids contracting her abdominal muscles, and the labour then proceeds with extreme tardiness, or ceases altogether, notwithstanding the intensity and continued character of the pains. The patient is in a state of extreme anxiety, accompanied by tenesmus of the bladder; the thirst is excessive, the pulse frequent, and the skin hot and dry. The continuance of this state, entirely analogous to the morbid contractions of which I have already spoken, may give rise to eclampsia, or determine inflammation of the uterus: it is important, therefore, to make every effort to moderate it. Embrocations should be made on the abdomen of equal parts of the oil of sweet almonds and laudanum; a small enema, with ten, fifteen, to twenty drops of the laudanum of Sydenham, should be administered, according to the intensity of the symptoms; should there be plethora, a small bleeding may be practised. Finally, if these remedies should not suffice, and the labour makes no progress, the fœtus should be delivered either by turning or by the forceps. In this case, however, turning can rarely be performed; in fact, the first contractions are often sufficient to render this operation impossible, in consequence of the retreat of the uterus, and to place the head within reach of the forceps.

ART. V.—OBLIQUITIES OF THE UTERUS.

In the article *Diseases of Pregnancy*, I spoke of the obliquities of the uterus; it remains now for me to speak of their influence on labour.

§ 1. *Anterior Obliquity.*

The anterior obliquity, when inconsiderable, is nothing more, as I have already observed, than the normal condition of the uterus arrived at full term, and requires no particular attention; but when it is very marked, it may sensibly retard the labour. It becomes necessary, therefore, to correct it; for, in consequence of the forced ante-version of the fundus, the neck of the uterus is thrown backward, and rests against the anterior surface of the sacrum (figure 102); the dilatation of the neck is accomplished with extreme difficulty, or is not accomplished at all; and if the pelvis is large, the head, not being able to pass the uterine orifice, pushes before it, as far as the vulva, the anterior and inferior segment of the uterus. The dotted curved line of figure 102 represents this condition of

things. Should the pelvis be contracted, the difficulty is much increased, and the consequences may be more serious. Thus, the anterior and inferior portion of the uterus, distended by the head, may be lacerated, or fall into gangrene.

Diagnosis.

It is easy, in the former case, when the head has descended into the cavity, to ascertain whether it is covered by the womb; for the finger, carried posteriorly, will feel the uterine orifice; and, moreover, the ante-version of the body of the organ will point out sufficiently the cause which retards the labour.

(Fig. 102.)

Ante-version of the Uterus.

(Fig. 103.)

Posterior Position of the Cervix.

The neck, however, may be thrown far backward, without an anterior inclination of the fundus, in consequence of its abnormal situation on the uterus (figure 103); and this disposition will occasion the difficulties I have just stated. It will be easy to distinguish these two conditions from each other.

When the head is still at the superior strait, the abdominal examination and the touch will enable us to recognise the malposition; and the orifice of the uterus will often, in this case, be more accessible than when the inferior portion of the uterus has been pushed into the cavity.

§ 2. *Posterior Obliquity.*

After the example of Baudelocque, Gardien, Desormeaux, and M. P. Dubois, I do not admit the posterior obliquity as at all possible at the full period of pregnancy; and, moreover, if it should exist, it never could be sufficiently marked to prove an obstacle to delivery. The body of the uterus, limited by the vertebral column, could never incline sufficiently backward to remove the uterine orifice from the superior strait: this orifice, at most, could be placed behind the pubes, but it would always be so related to the pelvic cavity as to render the passage of the head possible.

(Fig. 104.)



(Fig. 105.)



Certain authors, however, record cases of posterior inclination at full term, but these are nothing more, in my opinion, than instances of abnormal insertion of the neck on the anterior portion of the uterus (fig. 105). In looking at the observations reported by Meriman and Velpeau, the reader will find the truth of what I say. In fact, they have by no means demonstrated that there was posterior inclination of the organ; the situation of the neck seems to have particularly attracted their attention, and it is this circumstance which most probably has caused them to admit the posterior obliquity of the body of the uterus. In a word, whatever may be the cause of this accident, the consequences are always the same, as is also the treatment.

Diagnosis.

The situation of the orifice will suffice to characterize this accident.

§ 3. Lateral Obliquities.

As I remarked in treating of pregnancy, the right lateral obliquity is much more frequent than the left, and it is usually much more marked than the latter.

This obliquity rarely interferes with the termination of labour. However, it may slightly retard the delivery. I am also of the opinion that it may exert an influence on the character of the foetal presentation. I have already cited the case of a lady in whom this forced obliquity occasioned a frontal variety of the vertex, which the reduction of the uterus to its usual position, immediately corrected; and I agree also with Dugès, that it may likewise determine, in certain cases, the presentation of the trunk

Treatment.

The obliquities of the uterus rarely occasion a serious obstacle to the expulsion of the foetus. If they be not very marked, they may retard the labour, but nature overcomes, sooner or later, the difficulties. However, the accoucheur should not remain a passive spectator; he should support the uterus during each contraction, place it in its natural situation, and keep it so, if possible, by the position given to the woman. In this way the axis of the uterus is placed in relation with that of the superior strait, and the entire expulsive force being directed upon the foetus, the dilatation of the neck, and the descent of the head, are accomplished more rapidly.

In some rare cases, too, of excessive obliquity, nature alone may suffice; but here art, of necessity, should interfere. The uterus should be reduced to its position, and maintained in it.

In the anterior obliquity, the patient should be placed on her back; and in the lateral obliquities, on the side opposite to the obliquity. Then, with the hands placed on the exterior, the uterus is brought straight, and kept so, especially during the uterine contraction; a bandage will most usually fulfil this object, but it is better to

employ the hands at the moment of the contraction. In most cases these means will suffice. In some instances, however, it becomes necessary to draw the neck of the uterus forward with the fingers of one hand, while the uterus is supported with the other. This reduction of the neck should be made during the absence of pain, but the fingers should keep it reduced during the contraction. In a word, if these means prove insufficient, which would not be unlikely in case of the abnormal insertion of the neck of the uterus, and if the delivery should be impossible, it will become necessary, if the head be above the superior strait, to introduce the hand into the vagina, seek for the orifice, and endeavour to penetrate the uterine cavity, in order to perform the version of the fœtus.

If the head should be in the excavation, this operation would not be applicable; it would be necessary then to make an artificial passage for the fœtus, by incising the anterior and inferior wall of the uterus. (See *Vaginal Cæsarean Operation*.) This would likewise be the only alternative, if version be impossible when the head is situated above the superior strait.

ART. VI.—HERNIA OF THE UTERUS.

By *hernia of the uterus* is meant the passage of the organ through the separation of the linea alba; this is *eventration*, with excessive anterior obliquity. Hernia of the uterus through the inguinal or crural ring is likewise possible during the commencement of pregnancy, and it may continue to develop itself in this manner until full term, out of the abdomen. The *Memoirs of the Academy of Surgery* contain some very curious cases of uterine hernia, which, at the completion of gestation, required that the tumour should be opened.

Should there be nothing more than simple eventration, the reduction of the uterus is the only indication to be fulfilled. If there should be a positive hernia, the Cæsarean operation may be necessary; but it should not be hastened, in order that sufficient time may be allowed to test the inefficiency of the uterine contractions to effect the delivery; for, even in this case, some women have been delivered without aid. But there should not be too much delay, for fear of compromising the life of the fœtus, thus destroying the mother by the operation, and the fœtus by unnecessary procrastination.

ART. VII.—PROLAPSUS UTERI.

Prolapsus of the womb, at the full term of gestation, is of very frequent occurrence, but I have never known it to offer any obstacle to delivery. On the contrary, I have always observed that, in this case, the expulsion of the fœtus was more easy and rapid. Indeed, before labour, the head has already descended; sometimes, even, it rests on the floor of the pelvis. In order, therefore, to be expelled through the vulva, it only awaits the dilatation of the neck of the womb. The accoucheur then simply supports the

orifice, and places his finger on the anterior lip, endeavouring to bring it forward at each contraction. I never find it necessary to have recourse to any other means, unless there should be adhesion of the neck, or alteration of its tissue.

It is proper that the young accoucheur should be apprized of the possibility of this propulsion of the uterus, even as far as the vulva, by the head of the fœtus, in order that he may be guarded against an error which has been often committed.

Suppose, for example, that an inexperienced accoucheur should be called to a woman who has suffered for several days, but who, to the present time, has experienced merely those dull pains which often precede labour.

A vaginal examination satisfies him that, in the pelvic excavation, a few lines from the vulva, there is a solid tumour presenting the resistance of the head, on which he feels the sutures and fontanelles. It is really the head that he feels, with its sutures and fontanelles; but they are felt through the anterior and inferior segment of the uterus, which covers the head of the fœtus. The head is not naked; it has not yet passed the orifice. Thus, considering the duration and intensity of the pains, which, no doubt, have been exaggerated to him, and likewise the great descent of the head, he at once imagines the labour to be near its completion, and so informs the friends. He may suppose that the membranes have been ruptured, not having inquired of the patient whether or not this has really taken place. Indeed, should he take this precaution, he will not always, in this case, become more enlightened, for the rupture of the membranes may occur without the knowledge of the patient; and, again, if she should feel herself wet by the flow of urine or the vaginal mucosities, she may suppose that it is in consequence of the discharge of the amniotic fluid.

Judge, therefore, of the astonishment of the accoucheur, who, supposing that the labour is near at hand, finds that it continues for several days. His reputation is compromised, and his error may give rise to serious consequences. Thus, let us suppose that, believing the labour nearly completed, the accoucheur, after some hours of watching, finds that the head makes no progress, notwithstanding the tolerably active pains which have occurred, but which merely announce the commencement, and not the termination of labour (I have already observed that each stage of labour is marked by the different character of the pain). Under the persuasion that the head has passed the uterine orifice, he refers the delay in the delivery to the resistance of the membranous sac, supposing, as he does, that the membranes have not been ruptured. He also imagines he understands why the sensations offered to his finger were confused, and why he did not distinctly feel the fontanelles and sutures; he mistakes the inferior segment of the uterus for the membranes. With this conviction, he again inquires of the patient whether the waters have come away, and he directs his questions in such manner as to have his suspicions confirmed; he

then proceeds to rupture the pretended membranes with his finger nail; he even attempts to perforate them with the pen.

The failure of these attempts, and the pain they occasion the patient, may inform the accoucheur as to the nature of the obstacle, or induce him to suppose that the rupture of the membranes has been accomplished, and that the head rests naked in the cavity. Under this latter idea, he attributes the difficulty which he experiences in ascertaining exactly the characters of the presentation of the vertex to the swelling of the scalp, which, by a prolonged sojourn in the cavity of the pelvis, has become the seat of a sero-sanguineous tumour. Then, believing that the labour has continued for a long time, because he has felt the head at the inferior strait, and under an apprehension that this prolongation of the labour may prove injurious to the infant, tormented, too, by the assistants, to whom he has stated that the labour would be of short duration, and alarmed by the cries of the patient, he resolves to extract the fœtus by means of the forceps, attributing the delay to the resistance of the perineum, or to an excess of volume in the head, or, finally, to a contraction of the inferior strait, while the true cause of the difficulty is the last which presents itself to his mind. Judge, therefore, of the serious consequences resulting from the application of the forceps, the uterus being comprised between the head and the blades of the instrument.

It must not be supposed that this case is at all exaggerated. All experienced practitioners will confirm the necessity of this caution, and the pupils will thank me for having admonished them of a danger to which no author has as yet particularly alluded.

I have frequently been sent for, in similar cases, to apply the forceps, while all that was necessary was patience, and encouragement to the woman and assistants.

ART. VIII.—VOMITING.

It is not unusual, during labour, to see women attacked with vomiting, thus rejecting the nourishment or drinks they have taken, or simply throwing mucosities from the stomach. In the former case, as soon as the contents of the stomach are removed, the vomiting ceases; in the latter, the attempts to vomit, depending upon an oppression of the stomach, or the sympathetic reaction of the uterus, occur more or less frequently. There is nothing serious about this symptom, and it may be easily moderated, by giving sugar and water cold, with a few drops of orange-flower water taken in spoonful doses. The female should take no nourishment, for digestion cannot be performed during the labour, because all the forces of the organism are concentrated upon the uterus. However, should it be necessary to sustain the strength, some light broth, taken cold, may be allowed.

ART. IX.—SYNCOPE.

Feeble, nervous women, who, in a state of health, readily faint, are very liable to syncope during labour. If this should depend

upon the debility of the patient, her strength should be supported by tonics; but if it be often repeated, and so prolonged as to endanger her safety, the labour should be at once terminated.

Although Desormeaux cites a case in which delivery terminated spontaneously in a woman who fainted at each pain, during the whole labour, yet I do not think it advisable to abandon the patient to the consequences of these repeated syncopies.

ART. X.—CRAMPS.

I have spoken, in describing the phenomena of labour, of cramps, which take place in the thighs, legs, or certain parts of the abdomen; frictions constitute the only remedy.

CHAPTER II.

DISEASES UNCONNECTED WITH LABOUR, AND WHICH REQUIRE THE PARTICULAR ATTENTION OF THE ACCOUCHEUR, AND SOMETIMES HIS INTERFERENCE.

CERTAIN affections, unconnected with pregnancy and delivery, but which exist at the time of labour, sometimes oblige the accoucheur to interfere: such as phthisis pulmonalis, diseases of the heart, asthma, hemoptysis, hematemesis, hernia, paraplegia.

In phthisis pulmonalis, the resources of the organism are generally sufficient to expel the fœtus; however, when the disease is advanced, it is frequently impossible for the patient to make proper effort to second the action of the uterus; these efforts, too, may prove injurious to her, and hasten her death, and especially render it more painful. It is, therefore, the duty of the accoucheur to give his aid in this case; but as the first pains, which determine the descent of the head, are not severe, and as interference is not admissible until after the dilatation of the neck of the womb, version would rarely be indicated, unless the woman should be extremely enfeebled, and the first pains had not sufficed to cause the head to descend; the forceps, therefore, is the instrument usually employed under these circumstances. In fact, it is only after the head has reached the excavation that those expulsive and fatiguing pains declare themselves, which call forth such strong effort on the part of the woman, and which, if possible, she should be spared.

The conduct of the accoucheur should be precisely the same in an advanced affection of the heart, or in the case of an aneurismal tumour, which threatens to burst; the descent of the head should be committed to the first pains, if they be not of such a character as to endanger the life of the mother; and when the head is in the excavation, the accoucheur should proceed to deliver.

Asthma, and all affections interfering with free respiration, present the same indications.

In slight hemoptysis or hematemesis, it will suffice to employ remedies proper to arrest the hemorrhage, such as a small bleeding, revulsives to the inferior extremities, cold drinks, and sinapised maniluvia; but if the hemorrhage should be profuse, and increased by the contractions, it will be necessary to proceed at once to delivery, either by turning or the forceps, depending upon the situation of the head. The hemorrhage almost always ceases immediately after the extraction of the fœtus. Indeed, the discharge of blood, which takes place through the vulva, produces a very salutary revulsion.

If the patient should have an unreduced hernia, care should be taken to effect its reduction as soon as possible during an interval of calm, and maintain it reduced during the contraction of the uterus. If the reduction should be impossible, the accoucheur should prevent, by the pressure of the fingers during a pain, the protrusion of additional parts. If, in a word, there should be danger of strangulation, the labour must be immediately terminated.

I attended, at La Clinique, two paraplegic women in their labour, but they did not require any particular attention. However, this affection, as also hemiplegia, might offer an obstacle to the regular contractions of the womb.

CHAPTER III.

ACCIDENTS CAPABLE OF COMPROMISING THE LIFE OF THE MOTHER OR CHILD.

CERTAIN accidents, such as procidentia of the cord, escape of the meconium, too short a cord, hemorrhage, eclampsia, rupture of the uterus or vagina, which, although for the most part permitting the spontaneous expulsion of the fœtus, yet require the interference of art, because they are of a nature to endanger, more or less rapidly, the life of mother or child.

ART. I.—PROCIDENTIA OF THE UMBILICAL CORD.

By procidentia of the cord is meant the escape of that portion of the fœtal appendage below the presenting part of the fœtus. Procidentia most usually manifests itself in those presentations which do not completely close up the superior strait, such as presentation of the face, and especially of the shoulder. It may take place at any stage of labour, but it is much more frequent at its commencement, and at the moment of the rupture of the membranes. However, this accident may occur when the presenting portion of the fœtus already occupies the excavation, or has passed the inferior

strait. M. Nægele once remarked the descent of the cord by the side of the shoulder, the head having already escaped through the vulva. Finally, this procidentia may precede the rupture of the membranes, and the cord may descend in the amniotic sac by passing between the presenting part and the superior strait.

This variety, which some authors have thought proper to designate by a particular name, I consider nothing more than the first degree of the same accident, and I shall, therefore, call it procidentia; however, in the diagnosis and treatment I shall establish an important distinction between these two varieties.

Procidentia of the cord is not of very rare occurrence. According to the statistical observations of M. Schuré, of Strasbourg, one case of procidentia presents itself in two hundred and sixty-five cases of delivery. The observations made in La Clinique have given nearly the same results; and I am, therefore, induced to believe that there must be some error in the calculation of Madame Lachapelle, for she states that she has met with this accident only 41 times in 15,652 cases.

§ 1. Causes.

Predisposing Causes.—The predisposing causes are, the abundance of the liquor amnii; the length of the umbilical cord; the small size of the fœtus; a want of contraction in the inferior segments of the uterus, or a defective application of this latter over the descending portion of the fœtus; unnatural presentations of the fœtus, principally those of the trunk, because they do not fill up the pelvic cavity; deformities of the superior strait; insertion of the placenta over the mouth of the uterus, or in its vicinity; the insertion of the cord into the membranes likewise predisposes to procidentia, by maintaining this organ near the orifice. Finally, it is the same with regard to procidentia of the foot or hand, which, by keeping the presenting part distant from the pelvic circle, leaves a space through which the cord escapes.

Determining Causes.—The determining causes are, the sudden or premature rupture of the membranes, and the rapid discharge of a large quantity of liquor amnii; it is often, also, the result of manipulations, either necessary or ill-timed.

§ 2. Diagnosis.

The diagnosis of procidentia of the cord will vary, depending upon whether the membranes are ruptured or not. In the former case, it will be quite easy: the finger feels, through the membranes, a soft, small body, readily displaced, having active and frequent pulsations, which the accoucheur will not confound, on account of their rhythm, with the pulsations of his own arteries, or with those of the mother. It is proper, however, to observe that, even before the rupture of the membranes, the cord may sometimes be so compressed between the presenting portion of the fœtus and the superior strait as to change the character of these pulsations, and thus lead the accoucheur into error. The abnormal insertion, too, of

the cord into the membranes may likewise be mistaken for procidentia. In this case, the finger would immediately feel the pulsations of one of the ramifications of the cord, which are distributed over the membranes before passing to the placenta.

(Fig. 106.)



After the rupture of the membranes, the diagnosis is extremely simple, for the cord is readily felt; sometimes, even, it appears at the vulva.

§ 3. *Prognosis.*

Procidentia of the cord is one of the most serious accidents that can befall the fetus. Indeed, if the accoucheur do not interfere at the proper time, death is most frequently the consequence; and, with the best-directed effort, the child cannot always be rescued from the danger with which it is menaced. Certain circumstances which I have mentioned in speaking of the causes, and on which I shall rely in order to establish the treatment, may vary the prognosis: such as the integrity or rupture of the membranes, the actual condition of the prolapsed cord, the time which has elapsed from its first occurrence, the degree of pressure exerted upon it, the period of labour, the condition of the uterus and external organs, &c., &c.

As regards the mother, procidentia can exert no influence, for the labour is not retarded by it. However, there is one case in which delivery may be delayed, and occasion some inconvenience to the mother: it is the premature detachment of the placenta, and consequent hemorrhage, occasioned by too short a cord. Finally, under ordinary circumstances, procidentia of the cord can only indirectly prove injurious to the mother, either in consequence of the operations necessary to save the infant, or of the effort which the patient makes to accelerate her labour; and, indeed, she may be seriously affected by the apprehension she experiences with regard to the safety of the child; hence, care should be taken to keep her ignorant of the fact that the cord is prolapsed.

§ 4. *Consequences of Procidencia of the Cord.*

The compression of the cord, and, consequently, the interruption of the circulation in this organ, is the sole cause of the death of the fœtus. Guillemot and M. Velpeau think that the mere chilling of the cord, when it hangs out of the vagina, will often occasion the death of the fœtus, without any compression of the organ; but I do not concur in this opinion, and regard it only as an aggravating circumstance. Madame Lachapelle, who denies the influence of cold on the umbilical circulation, has seen the cord remain out of the vulva for several hours, and still the pulsations were felt. Baudelocque and Delamotte cite similar cases. I witnessed at La Clinique a case of this kind. A female in whom procidencia of the cord had occurred simultaneously with the rupture of the membranes, at eight o'clock in the morning, did not arrive at La Clinique until ten o'clock; about eight inches of the chilled cord were out of the vulva, and yet the pulsations preserved all their force; the reduction of the cord was effected by the sage-femme in chief, and the child was born spontaneously, and in a healthy condition; the cord was two feet in length.

But authors, who regard the compression of the cord as the principal, if not the only cause of the death of the fœtus, explain differently the influence of this compression; some suppose that the interruption in the circulation deprives the fœtus of the aliments necessary for its nutrition, and that it thus dies of inanition. According to others, the fœtus becomes a victim to apoplexy, because the blood, continuing to flow abundantly through the umbilical vein, cannot return to the placenta by the umbilical arteries. This opinion deserves no comment; for if the arteries be compressed, the vein will be so likewise, and the blood could not reach the fœtus, because it could not return to the placenta. For the same reason, the fœtus could not die of syncope; in fact, in order that the blood may return freely to the placenta, and not to the fœtus, we must admit that the vein alone could be compressed. Finally, most accoucheurs at the present day regard asphyxia as the chief cause of the death of the fœtus, admitting always that this condition is often complicated with a fulness of the brain, heart, lungs, and liver, circumstances which only show a plethoric state of these organs, but which do not constitute a veritable apoplectic condition.

According to the opinion most generally received, the placenta is, as I have already remarked, during intra-uterine life, the only organ from which the fœtus derives its blood. If, therefore, the fœto-placental circulation become interrupted by the compression of the cord, the blood of the fœtus cannot be taken to the placenta in order to be vivified by the mediate contact of the maternal blood, and the fœtus is placed in the condition of an adult deprived of atmospheric air, and dies of asphyxia.

The body of an infant that has died in consequence of the compression of the cord is livid, rarely pale and discoloured; the face, and especially the lips, bear principally the traces of the venous engorgement in the capillaries.

In the autopsy, I have sometimes found the vessels and membranes of the brain injected; but this is by no means constant. As to the accumulation of blood in the lungs, it is so uniformly met with, that it may be said to be the necessary consequence of asphyxia; the entire venous system is engorged with blood, while the arteries are nearly deprived of it. Lastly, the liver is much more frequently congested than the brain; and this is explained by the fact that the liver participates in the purification of the blood.

§ 5. *Treatment.*

Procidentia of the cord left to itself is almost always fatal to the fœtus; and, therefore, interference becomes necessary. Delay is permitted only in a very few cases, which I will state as precisely as possible.

a. *Before the Rupture of the Membranes.*

If the presence of the cord below the head be ascertained before the rupture of the membranes, the accoucheur should await the complete dilatation of the orifice before attempting anything, not that he could calculate on the spontaneous reduction, for this is extremely rare, but because any interference might result in the premature rupture of the membranes, a serious occurrence for the fœtus, as it would remain exposed to the dangers of compression until the dilatation permitted the accoucheur to do something effectually. But when the orifice is completely dilated, and the contractions have attained a certain intensity, the accoucheur should introduce two or three fingers, and even the whole hand, if the condition of the external parts will permit, in order to push up the cord through the membranes; then, profiting by an energetic contraction, he will rupture the amniotic sac, either with the hand introduced, or by means of an ordinary pen, carried along the hand supporting the cord, and pushed forward with the other; at the moment the fluid escapes, the head places itself exactly over the uterine orifice, while the cord, sustained by the extremity of the fingers, is carried above the superior strait, and is protected from compression.*

If the pelvis should be very capacious, the head small, and the membranous sac so distensible as readily to permit the descent of the head into the excavation, care should be taken not to rupture the membranes; and the accoucheur should wait, before rupturing the sac, until the external parts are sufficiently relaxed to permit the application of the forceps without inconvenience to the mother, in case the use of this instrument should become necessary. The parts, then, being in proper condition, the sac should be ruptured

* The 17th of July, at three o'clock in the afternoon, a female, by name Delaporte, entered the lying-in apartment at La Clinique. The presence of the cord was detected through the membranes. As soon as the dilatation was complete, M. P. Dubois effected the reduction of the cord with entire success, in rupturing the membranes, and the child was born alive: a circumstance unusual in compression of the cord, and to which I shall allude hereafter; the incomplete rotation of the head, in consequence of the descent of the arm, rendered the application of the forceps necessary in the cavity.

Frequently at this time, the head, being near the vulva, is expelled spontaneously, and no compression being exerted on the cord, especially if this latter have become prolapsed at the posterior portion of the pelvis, all interference becomes unnecessary; or if the child should be in danger, it will be easy to extract it with the forceps.

It is, therefore, evident that the circumstances in which delay is permitted before the rupture of the membranes are exceedingly limited, and they are reduced to the following: *integrity of the membranes when auscultation does not indicate any suffering of the fœtus; pelvis capacious; head small; contractions energetic; posterior prolapsion of the cord*; the accoucheur always remembering to exercise a strict supervision, and to be prepared to act in case the touch or auscultation should announce any difficulty in the fœtal circulation.

b. *After the Rupture of the Membranes.*

After the rupture of the membranes, the accoucheur should not be inactive, unless the head should still be high up in the pelvis, and an absence of the conditions indicating a speedy delivery, such as a capacious pelvis, a small fœtus, relaxed state of the external organs, and energetic contractions; the condition of the cord should be attentively watched, so that the forceps may be applied without delay, in case the safety of the child should be endangered. If, in consequence of the great descent of the head, the cord can no longer be felt, the accoucheur should carefully ascertain, by means of auscultation, the actual condition of the fœtus; and if the restlessness of the patient render this impossible, and especially if the amniotic fluid should be mixed with meconium, the fœtus should be delivered immediately. But when none of the circumstances which justify delay present themselves, the accoucheur should make every effort to replace the cord, and, in case of failure, he should terminate the delivery either by turning or the forceps, depending upon the stage of the labour.

The reduction of the cord is not a very difficult operation, nor is it always successful; and, moreover, it is not subjected to any fixed rule. A great number of instruments have been recommended, the use of which is more or less inconvenient and ineffectual. The hand should always be preferred to them; it acts with much more certainty, and possesses the important advantage of enabling the accoucheur to ascertain by the touch the condition of the fœtus. Although we cannot recommend any very positive rule, yet it may be observed, that this reduction should be attempted with the left hand if the cord is to the right, and *vice versa*; and, as much as possible, towards one of the two sacro-iliac symphyses, where, generally speaking, there will be found more space. The accoucheur must not be content to push the cord into the uterus; he should be careful that it is carried sufficiently high up to be free from all compression; and, moreover, he should keep it in place with the hand until the head, forced by the uterine contrac-

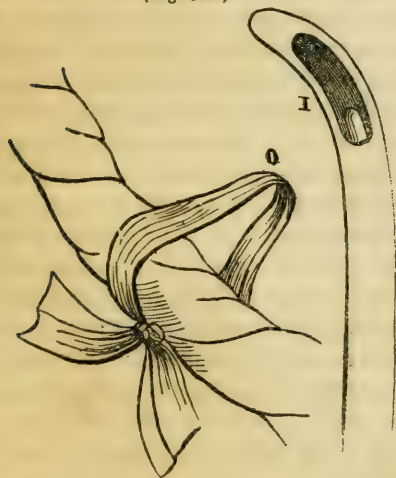
tions, fills up the superior strait. For this purpose, a piece of fine sponge has been recommended to fill the space through which the prolapsus has occurred; I have often used it, but prefer the hand.

Some authors, to avoid the procidentia of the cord, have advised to introduce the hand into the uterus, and wind the cord around one of the limbs of the fœtus; but this manœuvre is admissible only in cases where the pelvis is so malformed as to prevent pelvic turning, although the head might descend spontaneously.

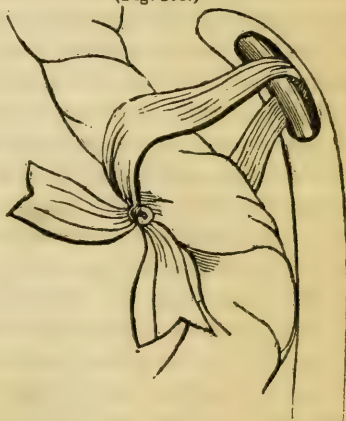
If the state of the uterine orifice, and the narrowness of the external organs, prevent the introduction of the whole hand, and, consequently, the reduction of the cord, we may use with advantage a gum-elastic catheter, armed with its stylet and a narrow riband, as was frequently employed successfully by M. Champion.

The mode of proceeding is, first, to tie the cord very loosely with the riband, then introduce the part (O) of the riband into the eye (I) of the catheter, where we observe the extremity of the stylet; the stylet then passes through the part (O) of the riband, is pushed to the end of the catheter, and carries with it the umbilical cord.

(Fig. 107.)



(Fig. 108.)



This sound is guided by two fingers, and introduced into the neck of the uterus, and pushed as far as possible into the organ. When once the reduction is complete, and the head has entered into the superior strait, the stylet is first withdrawn, so that the cord and the fold of riband are left in the uterus, and the catheter is then removed.

This reduction, as I have remarked, is frequently useless, either because the cord cannot be returned, and is reduced imperfectly, or will not continue. The course of the accoucheur varies in each case.

1. *Where the Reduction is impossible, or the Cord cannot remain reduced.*—As this case seldom occurs, except where the dilatation is perfect, we can interfere with advantage. If the head be above the superior strait, and if the life of the child be in danger, the accoucheur should deliver by pelvic turning; and, in this case, he should

be careful to push the cord into the uterus, so that it may not be compressed by the parts of the fœtus, as they descend into the pelvis. If the life of the child do not seem endangered, if the pulsations of the cord continue regular, if all the circumstances indicating a rapid descent coexist, we may delay acting till the descent takes place, being ready, however, to apply the forceps in case of need. Finally, if the head has come into the cavity, it would not be wise to trust its final delivery to the efforts of nature. The forceps should always be applied, especially in a first confinement. In fact, at this period of labour, we cannot ascertain directly by the cord the sanitary state of the child, as it is impossible to reach the umbilical fold; and, farther, auscultation throws no light on the subject, because of the cries and distress of the female.

2. *The Reduction having been performed, the Cord is beyond the reach of the Finger.*—Auscultation, and the discharge of the waters tinged with meconium, can alone demonstrate, in this case, whether the reduction be perfect or imperfect; whether the cord be or be not compressed; and, consequently, whether we must remain quiet or act.

These are the only general rules for this severe and difficult case. It is impossible to state precisely the indications: their appreciation must be left to the sagacity of the accoucheur.

Here, in these cases, auscultation is extremely valuable. If the pulsations of the heart be feeble and slow, after having been excessively frequent; particularly if their rhythm be irregular, intermittent, the life of the child is certainly in danger, and the accoucheur ought to interfere; but will this interference always be in time? and does not experience oblige us to admit, with M. P. Dubois, that a fœtus, in whom the pulsations have some force and regularity, who lives the intra-uterine life, may be unfitted by some unknown injuries for an extra-uterine existence, and expire on coming into the world? How, then, can the exact moment for interference be defined? No man can decide in advance. I repeat it, the accoucheur must depend on auscultation, and the different circumstances attending the labour.

ART. II.—DISCHARGE OF WATERS TINGED WITH MECONIUM.

The discharge of the waters tinged with meconium in presentations of the head, is a certain sign that the fœtus suffers, or has suffered; and ought, therefore, to excite the anxiety of the accoucheur. In fact, whenever the circulatory relations between the fœtus and the mother are interrupted by the compression of the cord, the fœtus attempts to accomplish the acts of extra-uterine life. Thus it urinates, and this act cannot be perceived, because it is impossible to distinguish the urine from the water of the amnios; the meconium is passed, and gives to the water the characteristic greenish tinge. We must not confound this with the discharge of the meconium in pelvic presentation: here, the excrementitious matter is discharged by the mechanical compression of the parts, but yet the life of the fœtus is not endangered. This circumstance is

even a characteristic sign of the presentation. What, then, must the accoucheur do when the head presents, and the waters tinged with meconium are discharged? He must first ascertain if a fold of the cord have not passed below the head: if this accident do not appear, he must examine, by auscultation, if the compression of the head in a remote point be not the cause of this phenomenon: if the pulsations be normal, there is nothing to be done; for if the discharge of the meconium have been caused by a derangement of the circulation, it has been but momentary, and no longer exists.

If the rhythm of the pulsations be altered, if they grow weaker, after a marked period of acceleration, the cord is compressed in some point which cannot be reached, and we must then interfere by the forceps or by turning.

ART. III.—SHORTNESS OF THE CORD.

Shortness of the cord operates unfavourably on the progress of labour, the life of the fœtus, and that of the mother; this shortness may be natural, that is, the umbilical cord may be very short; it may be accidental, in consequence of the cord, naturally very long, becoming shorter, by making turns around the limbs, neck, or trunk of the child. Farther, whatever may be the cause, this shortness may occasion many accidents: such as slowness of the labour, the death of the fœtus, the premature separation of the placenta, the inversion of the uterus, &c., &c.

§ 1. *Influence of Shortness of the Cord on the Progress of Labour.*

Some authors admit that shortness of the cord, by retaining the fœtus fixed to the wall of the uterus, may retard the descent of the head to the superior strait and in the cavity. Finally, that this shortness may prevent its descent into the inferior strait.

It is easy to explain the symptoms caused by this circumstance, when the membranes are once ruptured: but how admit that this shortness may produce the slightest accident, manifest externally, when the bag of waters is entire? I admit that I cannot understand the effects of this shortness, before the rupture of the membranes. In fact, the cord cannot be so short as to prevent the descent of the head a few lines: besides, if no cord existed, if the full-grown fœtus were attached to the placenta by the umbilicus, which would bring the uterus with it, it would rest on the superior strait; and, farther, what influence could the non-descent of the fœtal part have on labour, while the membranes were entire? Farther, can we admit, also, that this non-descent can retard the labour by preventing the rupture of the membranes, when every one knows that the membranes are ruptured prematurely, precisely in those cases where the fœtal part cannot descend? Ought we not, in this case, when there are contractions, attribute the delay rather to the resistance of the membranes than to another cause which is still more rare? The effects of this shortness may be so easily attributed to many other causes, that it is extremely difficult to establish the diagnosis of this accident. Authors, however, have at-

tempted to lay down signs, by the aid of which we can detect this circumstance at all periods of labour; but every practitioner will see in most of these characters the result merely of a theoretical study of the effects which may be produced by this accident.

Thus, it is said before the rupture of the membranes it will be easy to see, in the case of shortness, that the elevation of the head after contraction does not resemble its habitual elevation during pain, when the cord is not drawn down, &c., &c.

Then, after this rupture, the depression of the fundus of the uterus during contraction, its elevation after the pain, which may be detected by applying the hand to the abdomen, may serve to characterize this symptom, &c., &c.; certainly, in some cases, which, however, are very rare, it will be possible, by great tact, to ascertain that the delay in parturition depends on the shortness of the cord; but we must also admit that, in most cases, the cause of the delay will remain completely unknown, especially in the first period of labour; adding, however, that the shortness at this period may cause some apparent symptom: thus, before the rupture of the bag of waters, who would pretend to ascribe the slowness of the labour to the shortness of the cord rather than to the resistance of the membranes, especially when it is universally known that this resistance of the membranes is much more common than the shortness of the cord? It is only after the spontaneous or artificial rupture of the membranes that the head could be retained at the superior strait by the shortness of the cord; and yet this circumstance is very rare; and even in this case, we should be more disposed to attribute the delay of the head to its excessive size (a fact very difficult to be ascertained), or to any other cause rather than to the shortness of the cord.

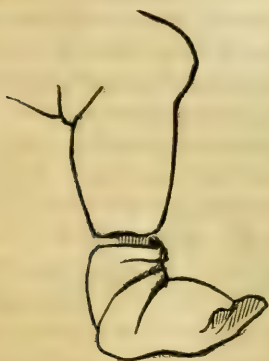
Finally, when the head is in the cavity, when it is at the inferior strait, even when the signs which characterize this accident are as evident as they can be, the accoucheur will refer the delay in the labour to anomalies in the rotation of the head, resistance of the perineum, insufficiency of the contractions of the uterus, rather than to the true cause. In fact, the shortness of the cord can exercise no influence on the progress of the labour until after the rupture of the membranes, and this cause cannot be ascertained until the head has descended into the cavity, and then the diagnosis will be very uncertain; but it will be proper to attribute delay in the labour to the shortness of the cord, if the accoucheur have ascertained, by examination, that the head is small and movable, have performed its rotatory motion, that the perineum is very extensible, that the head does not rest upon it during the pains, and that his finger feels, at each contraction, the depression of the head, which returns to its former position when the pain has ceased; and, finally, if this phenomenon be noticed at every pain, without any advancement of the head. The pain felt by the female in a definite point, corresponding to the place of insertion of the placenta, also serves as an indication; and, finally, the cause of the delay of the head is indicated most clearly by hemorrhage following the rapid descent of the head, which had

hitherto remained stationary, by the rapid progress of the head under the influence of each pain, when these pains had previously been inefficient. The accoucheur can no longer be in doubt as to the true cause, when nature uses one of her resources (rupture of the cord, or premature separation of the placenta) to overcome the obstacle. Hence, the true cause of the slowness of the labour is most frequently detected at the moment when another symptom, hemorrhage, requires interference. We will, however, remark, that although it may be impossible to form a correct diagnosis, yet the means to be employed to remedy shortness of the cord will, in most cases, be the same as those adopted to remedy the accident erroneously thought to retard the labour. In short, whatever may be the cause of delay, the mode of action will be nearly the same.

§ 2. *Influence of the Shortness of the Cord on the Health of the Fœtus and Mother.*

The shortness of the cord may endanger the health of the mother and fœtus, by prolonging the labour, by the operations which are necessary, by the premature separation of the placenta and its consequences, by the laceration of the umbilicus, or by the inversion of the uterus, caused by the adhesions of the placenta. When the umbilical cord is not ruptured, the child may suffer from asphyxia, during labour, by the constriction of the folds of the cord on its limbs and neck. Here, death results from the compression of the cord; the fœtus also may be strangled by folds constricting the neck, a fact seldom witnessed during labour, but sometimes occurring during intra-uterine life. M. Taxil has seen a child, in whom the neck was so much constricted by three turns of the cord as to measure only two or three lines in thickness. Montgomery, in his excellent treatise on the "*Signs of Pregnancy*," mentions several cases of strangulation of the limbs, and we present two drawings made by this gentleman from nature.

(Fig. 109.)



(Fig. 110.)



He attributes these spontaneous amputations, as he terms them, to the constriction of the cord; in fact, in figure 110 we see the remnant of this cord going from one limb which is entirely separated to another which still remains attached. Formerly, these

spontaneous amputations were generally thought to be caused only by partial gangrene.

§ 3. *Treatment.*

In these cases, the indications of treatment vary with the period of labour. But most generally they are fulfilled while remedying accidents other than the shortness of the cord, and, very happily, the result is the same.

Thus, before the rupture of the membranes, the dilatation being perfect, if, by a rare exception, the labour is delayed by the shortness of the cord, the accoucheur would certainly attribute this delay to the resistance of the membranes, and would rupture them: the waters would then pass off, the uterus would contract, and permit the fœtus to come down still more; but if the shortness of the cord could retard the descent at the superior strait, it will delay it much more in the cavity, as the uterus cannot descend and permit the fœtus to come down; new difficulties will then appear; then, whether we can or cannot ascertain the true cause of the delay in the progressive and retracting motions of the fœtus, when it is evident that delivery cannot be accomplished, although the pains are very strong, the forceps must be used. If the head be detained at the inferior strait, the forceps must still be employed, whether the delay is attributable to the resistance of the perineum or to the shortness of the cord.

But in all cases, as soon as the cord can be reached, if it be twined around the neck of the child, we must relax the folds and disengage the head, or we must cut it, holding the fœtal end of the divided cord firmly in the fingers, and deliver the child with rapidity. If the cord be naturally short, we cannot reach it until the shoulders are delivered, and we divide it with the same care.

The assistance to be given to the mother and child will vary with the circumstances which may complicate labour. (See *Hemorrhage, Inversion of the Uterus, &c.*)

ART. IV.—UTERINE HEMORRHAGE DURING LABOUR.

Under the term uterine hemorrhage I include all discharges of blood from the genital organs, coming either from the vessels of the uterus or umbilical cord. This form of hemorrhage, which is alone to be treated of here, is one of the most formidable accompaniments of labour.

§ 1. *Causes of Uterine Hemorrhage.*

These causes are either predisposing, determining, or special.

Predisposing Causes.

Pregnancy, in consequence of the modifications it causes in the circulation, is the principal predisposing cause of hemorrhage. Thus, during gestation, the circulation and nutrition become more active, the pulse is fuller and more frequent, the skin is redder; in

fact, general plethora exists; but the circulation is most active in and near the uterus. The uterus becomes a circulatory centre, and this state, in which the adjacent organs participate, is singularly increased by all the circumstances which can quicken the circulation: such as a sanguineous temperament, profuse menstruation, and even a lymphatic temperament, which often attends uterine congestion, and predisposes certain females to a kind of hemorrhagic diathesis at each menstrual period. Of this character, also, are moral and physical excitements; finally, all causes which can maintain great activity in the general circulation, and especially which may determine a considerable afflux of blood towards the uterus, such as rich food, the repeated use of spirituous drinks, attendance at balls, the use of very hot baths, revulsions on the lower limbs, physical excitements, and diseases of the uterus and adjacent organs. The anatomical arrangements of the circulation of the uterus and appendages of the fœtus at an advanced period of pregnancy, so well described by Dubois and Jacquemier, explain the mode of production and frequency of hemorrhages.

If we examine the organs when their development is perfect, when the placenta is the seat of a double circulation, we are struck with the enlargement of the sanguineous apparatus of the uterus and adjacent organs.

The four arteries which supply blood to the uterus (the hypogastric and the ovarian) enlarge considerably as they approach this organ. Before giving off their first divisions, they enlarge, dilate as they advance between the peritoneum and the external surface of the uterus, and then ramify, ad infinitum, in the tissue of the uterus, doubling in size. Others, which are invisible in the unimpregnated state, are successively developed, and likewise present a large calibre.

If we examine the veins, from their leaving the uterus till their opening into the hypogastric and ascending vena cava, we see that they are much enlarged. Thus, considered in the uterine parietes, the veins seem like canals situated in the centre of the muscular tissue; they anastomose and form large sinuses, into some of which the little finger can be inserted. These veins are much broader at the point of insertion of the placenta, open on the inner surface of the uterus, and empty into the sinuses of the placenta.

We can see, from this arrangement, how all the influences which can produce congestion in the organ, and, consequently, cause a rupture of the vessels, will occasion hemorrhage. But what class of vessels will be ruptured most easily, and will most generally supply the effused blood? M. Jacquemier thinks that the venous system is the first to yield. The arteries, on the contrary, unless they are diseased, and even those which are protected only by the deciduous membrane, are ruptured much more rarely than the uteroplacental veins, the soft tissue of which does not present much resistance. Farther, although it may be proper to attribute hemorrhage to the arterial circulation, since plethora commences by the arterial system, it is still true that most of the blood in uterine hem

orrhages comes from the venous system, and this fact confirms the opinion of M. Jacquemier.

In fact, what occurs? plethora appears in the arterial system, but the utero-placental arteries resist it. The plethora then passes from the arterial to the venous system, where it finds less resistance.

Determining Causes.

All the preceding causes, when they act for a certain time, may become determining causes; farther, the various physical and moral emotions which I have already enumerated under the article *Abortion*, may also occasion this accident.

Special Causes.

The special determining causes are, the premature separation of the placenta, in consequence of the too rapid retraction of the uterus; the lacerations of the neck of the uterus, the insertion of the placenta on or near the orifice, the spontaneous laceration of the inner coat of the uterus, the complete rupture of its parietes, the bursting of a thrombus of the vagina or vulva, the abnormal insertion of the cord on the membranes, and the rupture of one of the vessels; finally, rupture of the umbilical cord.

A. *Premature Separation of the Placenta.*—The irregular pathological contractions, the too sudden and rapid normal contractions of the uterus, and its too rapid retraction, may separate the placenta prematurely from the inner surface of the organ, and produce a hemorrhage, which is the more dangerous, in proportion as the labour is less advanced; and, as is known, these phenomena are particularly manifest in cases where the uterus has been distended by dropsy of the amnios, at the moment when the rupture of the membranes permits a large quantity of the water to escape, or in cases of twins.

In the latter case, hemorrhage may occur after the birth of the first child, and then the life of the mother and that of the second child, which is contained in the uterus, may be compromised; or it may appear after the birth of the two children; then only the life of the mother is endangered.

The separation of the placenta may also be caused by the shortness of the umbilical cord; often, also, by the descent of the entire ovum, or of a part of the membranes, covering the head of the child.

B. *Lacerations of the Neck of the Uterus.*—The fœtus can rarely pass through the maternal organs without lacerating the neck of the uterus to a greater or less extent, and if, in this case, only a little blood escape, it is because the fœtus obliterates the patulous mouths of the vessels which are exposed by the laceration of the neck in its passage. Hence, although this accident occurs frequently, serious hemorrhage is rare.

C. *Insertion of the Placenta on the Neck of the Uterus.*—The insertion of the placenta on the neck of the uterus is an almost con-

stant cause of uterine hemorrhage. Authors, however, mention cases of this insertion without hemorrhage. M. Moreau explains this fact satisfactorily. He remarks, that these instances of insertion of the placenta without hemorrhage are all referrible to cases where the fœtus had died, often long before its expulsion. In this case, in fact, the uterine circulation is modified as follows: of all the blood going to the uterus to nourish the fœtus, only as much reaches it as is necessary to the uterine circulation, properly so called; the vessels diminish, some even are effaced; in fact, the stimulus which solicited the blood to the uterus having ceased, the circulation is so modified that but little or no hemorrhage occurs when the placenta separates; or, in all cases, if hemorrhage occur, it is very slight.

How can we explain the production of hemorrhage in cases where the placenta is inserted on or near the orifice? In the latter weeks of gestation and during labour, this phenomenon is readily explained. In fact, at this time, as I have remarked when treating of the diagnosis of pregnancy (eighth and ninth month), the inner orifice begins to open in the primipara; and, in females who have borne children, it frequently dilates several weeks sooner. Then, as the placenta cannot participate in this dilatation, the vascular connexions between the placenta and the uterus are partially destroyed, and the blood escapes externally.

This opinion is confirmed by the period of pregnancy when these hemorrhages occur; viz., from the eighth to the ninth month.

The abnormal insertion of the placenta on the neck of the uterus, however, may cause hemorrhage at an earlier period of gestation; but this is rare, and cannot occur before the end of the sixth month; and then we must find another explanation of this circumstance. The following appears to me to be the most rational: before the end of the sixth month, the uterus is developed, especially at its fundus; the lower part, on the contrary, is not equally developed, but its enlargement coincides with that of the placenta; hitherto these two parts, the placenta and neck of the uterus, preserved their relations of connexion; but, after the end of the sixth month, the lower part of the organ increases in proportion to the increase of the fundus, while the placenta, which has acquired nearly its entire development, can no longer participate in this rapid increase; then the inter-utero-placental tissue is lacerated, exposing the open orifices of the utero-placental vessels, and hemorrhage ensues.

D. *Rupture of the uterus, and thrombus of the vulva and vagina* are rare accidents, which I shall treat of in a special chapter.

E. *Finally, the rupture of one of the vessels of the cord, or of the cord itself*, may cause a serious hemorrhage, especially for the fœtus. In this case, the discharge may be intra-ovular, intra-uterine, or external.

This accident may depend on a disease of the tunics of the cord, the special arrangement of its vessels, and, finally, on the shortness of the cord.

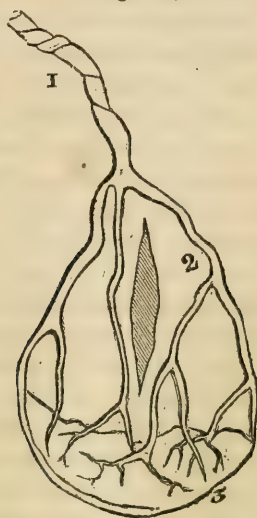
I have, as already remarked, a cord where the vein is varicose in many parts, and presents, especially in one of its points, a swelling, which seems to be a collection of blood, the organized clot of which around the vein compresses it on all sides. I attributed the death of the fœtus to this compression. Several similar facts are cited by authors, but they are not common.

We can then see, that if the vein may rupture and permit blood to be effused into the sheath of the cord, this sheath also may be ruptured, and give rise to a hemorrhage which is serious to the child and mother.

Velpeau relates several similar cases. M. Deneux has observed one where the vein was very varicose in almost the whole of its course, and had discharged a great quantity of blood.

This accident may also cause a hemorrhage within the ovum, and an external or intra-uterine hemorrhage, according as the membranes are entire or broken, according as the neck of the uterus is or is not closed by clots.

(Fig. 111.)



The vessels of the cord may sometimes separate or ramify on the surface of the ovum, before going to the placenta. I have twice noticed this arrangement, and one of these placentas has been prepared by M. Voillemier.

We then easily understand that if the membranes are ruptured at the point where the vessel is inserted, this vessel may be broken and give rise to severe hemorrhage, which will generally be extra-ovular; but which may be internal, if the flow of blood through the neck of the uterus be prevented by some obstacle.

In a similar case, observed by Nægele, one of the vessels was ruptured, and the fœtus died of hemorrhage. This fact is unique.

When the cord is short, hemorrhage may occur from its rupture.

§ 2. *Diagnosis of Uterine Hemorrhage.*

The symptoms of uterine hemorrhage are distinguished into *precursory symptoms* and *symptoms of actual hemorrhage*.

Precursory Symptoms.

Hemorrhage sometimes appears suddenly, even when not caused by external violence; but most commonly the female feels a weight and sensation of heat, trembling in the pelvis, dull pain in the loins and thighs, and uneasiness in all the limbs; sometimes, also, the local symptoms of plethora are attended by general symptoms. Thus, the patient's face is flushed; she feels a dizziness and headache; the pulse is full, developed, slow, &c., &c. The active motions of the fœtus are slow, dull, or have ceased altogether.

Symptoms of actual Hemorrhage.

The precursory symptoms appear a longer or shorter period before hemorrhage occurs; the symptoms which announce the actual existence of this accident are distinguished into *general* and *local*.

A. General Signs.—Weakness of the pulse, paleness of the face, coldness of the extremities, ringing in the ears; finally, all the symptoms of hemorrhage, which generally occur.

B. Local Signs.—The local signs are also distinguished into two classes: according as the hemorrhage is apparent externally, *external hemorrhage*, or when the discharge of blood does not appear externally, *internal hemorrhage*.

External Hemorrhage.

The hemorrhage itself is its own symptom. Accoucheurs generally attempt to ascertain exactly the cause of hemorrhage, in order to establish the diagnosis. This seems to me perfectly useless; for whether the hemorrhage be occasioned by the insertion of the placenta over the orifice, or its premature separation, &c., &c., the indications will be varied only by the lightness or severity of the accident; farther, this persistence in establishing the diagnosis may be attended with serious consequences: examinations by the finger may separate the coagula and increase the hemorrhage, or renew it if had been checked.

Nevertheless, if, by great care in his investigations, the accoucheur detect in the neck of the uterus a spongy and soft body; if the membranes be entire, and the hemorrhage increase during uterine contraction, it must be attributed to abnormal insertion of the placenta on the neck of the uterus.

If, on the contrary, it arise from the separation of this body, the hemorrhage increases only between the pains; it is less during contraction, and the placenta is not felt at the orifice.

After the rupture of the membranes, these differences in the increase or diminution of the flow cease to be perceptible. In both cases, the pressure produced by the head of the child prevents the

blood from escaping during contraction. Farther, we understand the equivocal character of these signs, and why that which seems the most positive, the presence of the placenta, may lead into error, because it is difficult for the accoucheur to distinguish the placenta from the clots which obstruct the uterine orifice. But happily, in this case, an exact diagnosis is not material.

The difficulty of the diagnosis, in cases where the external hemorrhage comes from the umbilical vessels, is explained with equal facility.

Hemorrhage from the separation of the placenta, and even that arising from the insertion of the placenta over the orifice, may be confounded with that coming from a tumour of the hairy scalp, or from any other part of the fœtus which may be ruptured. At the hospice of La Maternité, at Paris, this was seen by M. P. Dubois, in an encephalic child: at first view, this tumour was mistaken for a separated placenta.

Internal Hemorrhage.

At an advanced period of pregnancy, even during labour, a small quantity of blood may accumulate in the uterus and remain unobserved; but most generally, especially if the hemorrhage occur to any extent, it appears externally by general signs, which I have mentioned, and by the following local signs: there is greater resistance of the mass of the uterus, irregularity of its form, coincident with its unusual and rapid development, and the cessation of active motions.

During labour, internal hemorrhage is most frequently preceded, attended, or followed, by a slight discharge of blood externally: in this case, the hemorrhage is both internal and external.

In short, the more advanced the pregnancy, the more serious and easily distinguished will be the hemorrhage. Sufficient blood to endanger the life of the child may, however, be effused between the uterus and the separated ovum, although the accoucheur may be ignorant of it, from any effects on the state of the mother.

This accident may be confounded with dropsy of the amnios or tympanitis, but the absence of the other signs of internal hemorrhage soon removes all doubts.

Seat of the Effusion.

The seat of the effusion in internal hemorrhages varies according to the cause of the hemorrhage. Thus, in cases of separation of the placenta:

1. The blood may accumulate between the placenta and the uterus, and the placenta, separated at its centre, may adhere to the uterus at its circumference; but most frequently, the blood from the placenta, the adhesions of which are destroyed in one point, separates the membranes, and is effused around the ovum: in this case, the internal hemorrhage may be fatal to the mother and child. In fact, the uterus, in the usual state of pregnancy, is not so much enlarged as not to allow room for farther distension, by a

quantity of blood sufficient to be fatal to the mother and child, although some authors have denied this.

2. The blood may also be effused between the folds of the different membranes; M. C. Baudelocque mentions several cases of this, and sometimes the quantity of blood may be so large as to occasion anxiety. Most frequently, however, these hemorrhages are slight, and are not observed.

3. Effusion may take place within the membranes by the rupture of the cord (intra-ovular hemorrhage); numerous cases cited by Baudelocque, Delamotte, Peu, Nægele, Deneux, Guillemot, establish incontestably the possibility of these hemorrhages.

4. Finally, the blood may be effused within the placenta, but this internal hemorrhage, or *apoplexy of the placenta*, cannot be considered in the same point of view as the preceding: in fact, it never endangers the life of the mother; and if the child die, it is not from the loss of blood, but because the apoplectic sinuses, when numerous, cause the degeneration of the placenta, and disturb or nullify its functions.

§ 3. *Prognosis.*

The severity of the prognosis varies in a ratio with the quantity of blood lost, according to the period of the labour when hemorrhage occurs, its nature, and the causes which produce it.

Thus, hemorrhage will be more serious to the mother and child as the accident appears at a period of labour more remote from the moment when the dilatation of the uterine orifice or that of the external parts will permit the spontaneous expulsion of the fœtus, or its extraction. In fact, during the time required by these parts to become properly prepared for delivery, the quantity of blood discharged may endanger the lives of both mother and child.

It is much more serious for the child during labour than for the mother; it is more serious also for both in cases where the placenta is inserted over the orifice, when this insertion occurs in the centre: the almost perfect separation of the placenta causes, at the moment of labour, a considerable hemorrhage, which is the more alarming for the mother as she may have been already enfeebled by hemorrhages which appeared in the latter months of pregnancy; much more dangerous for the fœtus, as the relations which unite the placenta to the uterus are more completely destroyed.

We understand, also, that this accident is much more serious in cases of the premature separation of the placenta, according as this separation is more complete.

The internal hemorrhage is much more dangerous than the external, because it may give rise to a considerable loss of blood before it is indicated by any external symptoms; and then, when it is detected, it is often too late to remedy it efficiently.

Internal hemorrhage is less serious before than after the rupture of the membranes: thus, before this rupture, the dilated uterus contains a smaller quantity of blood than when the ovum is ruptured. Besides, after the rupture, art is deprived of a saluta-

ry resource — the artificial perforation of the membranes. This operation stimulating, in fact, the contraction of the uterus, will often arrest the hemorrhage, especially in cases where it arises from a premature separation of the placenta, inserted on the fundus of the uterus, this part possessing more power of contracting than the neck.

Hemorrhage is a much more serious thing for the mother in the hospital than in the city, especially when metro-peritonitis is epidemic, as discharges of blood singularly predispose to this terrible disease.

If the profuseness of the hemorrhage be equally fatal to the mother and child, we must not think that the loss of blood operates in the same manner on both.

The mother dies anemic; but the quantity of blood which is lost rarely endangers the life of the fetus, unless the blood comes from the umbilical cord. The child dies from asphyxia, as if the cord were compressed. Instead of being anemic and pale, it is, on the contrary, red and violet: at the autopsy, we find all the veins gorged with blood, as occurs in asphyxia.

When the hemorrhage has been very great, without, however, destroying the life of the mother, it affects the system severely. The female becomes much enfeebled, she presents all the symptoms of chlorosis, and indigestion and the sight and hearing are affected; but she rarely escapes those nervous headaches which are so permanent and painful. I have often had occasion to observe this fact, which seems to me to be a natural consequence of profuse hemorrhage. Farther, all remedies for this are useless, and it continues till the strength of the patient is restored by proper regimen.

§ 4. *Treatment.*

The treatment of uterine hemorrhage is preventive or curative; the whole preventive treatment is found in the article *Hemorrhage and Abortion during Pregnancy*. The curative treatment is general and special.

General Treatment.

When the accoucheur is called to a female affected with hemorrhage, he must cause the patient to lie down in the horizontal posture; remove the pillows, and elevate the hips on a firm cushion, so that the chest may be lower than the hips. The chamber should be well aired and ventilated, yet it should not be very light. The most perfect repose of body and mind is indispensable.

Hence the female should be encouraged, and the utmost silence and complete quiet should be preserved around her.

The patient should be lightly covered at the upper part of the body; the feet and legs should be uncovered, or protected only by a sheet; the rectum should previously be emptied by a cold enema, or mild laxative if the enema be insufficient, and the drink should be cold lemonade, currant-jelly water, &c.

Special Treatment.

The special treatment also varies according to the lightness or severity of the accident, and according, also, to the period of labour. The remedies, however, do not depend at all on the causes producing it.

The following table, which belongs entirely to M. Dubois, embraces all the modifications which this state can present. (See Table, p. 260, 261.)

Remarks on the Indications in the Table.

It will be seen that the indications rest on the lightness or severity of the hemorrhage, and not on the insertion or non-insertion of the placenta on the neck. This circumstance, however, is not immaterial; the hemorrhage produced by the separation of the placenta inserted over the orifice is most generally severe, and then demands the remedies indicated for ~~profuse~~ hemorrhages. At times, however, the insertion of the placenta on the neck of the uterus occasions only slight bleeding. I do not think, then, with most accoucheurs, that the insertion of the placenta on the neck requires the labour in all cases to be terminated rapidly and promptly. It may, however, modify the employment of the remedies indicated. Thus, in a case of severe hemorrhage, if the placenta cover the orifice entirely, we cannot have recourse to the simple rupture of the membranes, as we should if this did not occur. If the orifice be not sufficiently dilated nor dilatable to admit the hand, the tampon should be used; on the contrary, if the hand can be introduced, we must separate one of the sides of the placenta to open a passage into the uterine cavity, and terminate labour by turning. But if a portion only of the placenta be inserted on the orifice, and leaves a part of the membranes exposed, we may proceed as if the placenta was not inserted on the orifice.

In no case is it proper to pierce the placenta, as some authors recommend.

Finally, if the placenta be crowded by the head or pelvic extremity of the fœtus, and be entirely, or almost entirely, separated, and have passed through the orifice of the uterus, we must remove it before the fœtus; for the organ in this case is useless, and its presence in the vagina obstructs the free use of the hand and instruments.

In the article *Abortion* I have mentioned the mode of applying the tampon.* This is a valuable remedy, and acts first by pre-

* In 1841 I was called, by Dr. Cazalis, to see a young female in her first labour, in the Rue de Seine, St. Germain, and who was affected with hemorrhage. She had gone the full term; the thick neck was resisting and not dilated, and would not allow any measures to be taken to relieve the mother and child from the dangers of hemorrhage, although this was very profuse, and the female seemed much debilitated. Touching per vaginam readily discovered the presence of the placenta at the orifice; the membranes were entire; the pains were feeble. Through the placenta was felt a firm, hard body, which I regarded as the head. Auscultation might perhaps have thrown some light on the subject, but I considered it as most important to ascertain the existence of the child, whether it was alive, and to check the hemorrhage as soon as possible; I had to choose between the rupture of the membranes

SYNOPTICAL TABLE OF THE TREATMENT OF HEMORRHAGE.

BEFORE LABOUR.		
Slight hemorrhage A.	Horizontal posture. Absolute rest. Fresh air. Cold acidulated drinks. Diet. Bleeding, if there be symptoms of plethora. Voiding the bladder and rectum.	
	Same remedies as at A, except bloodletting. Cold applications from the first. Then ergot, 36 grains in three doses, every ten minutes.	{ The ergot is used here as a hemostatic: in the case supposed, there have been no uterine pains; possibly the ergot may produce them; for this remedy has the power of increasing the contractions when they occur spontaneously, and also serves to excite them when they do not exist.
Severe hemorrhage B.	And if these means fail, apply the tampon, and, in some special cases, perforate the membranes.	{ The tampon will at first arrest the hemorrhage; then by the retention of the blood, and by its presence, it will irritate the neck and orifice of the uterus, and will bring on expulsive contractions. These will dilate the orifice, and this dilatation will permit, afterward, either the simple rupture of the membranes, or the termination of the labour.
	Orifice not dilated, and not dilatable.	{ Membranes } Same remedies as at A, except bleeding, which is only proper when plethora is extremely well entire. { marked. Membranes } <i>Idem.</i> ruptured.
Hemorrhage slight.	Orifice dilated.	{ Membranes } Same remedies as at A, then wait or rupture the membranes. entire.
		{ This rupture cannot be attended with any bad results; it is a means of preventing the increase of hemorrhage. We may, however, dispense with it, and simply wait till the progress of labour has arrested hemorrhage; this latter mode, after all, will appear on the most judicious, and the selection of the course to be pursued will depend on the greater or less tendency to the increase of hemorrhage. 1st, wait if the hemorrhage do not increase, and, <i>a fortiori</i> , if it diminish; 2, or rupture the membranes if there be any tendency to increase. Perhaps it will be useful to precede or follow this rupture by doses of ergot, if the uterine pains are feeble or infrequent.
		{ It may be asked if it would not be proper to terminate the labour in this case, as the parts seem disposed to this termination. We think if the presentation of the fetus be favourable, it is best not to turn or use forceps, as these remedies would be more serious than the slight hemorrhage, for which they may be used.

Membranes { Same remedies as at A, except bloodletting, then refrigerants. In case these fail, and if the pains be
entire. { weak, ergot: then rupture the membranes. Finally, if the orifice do not permit turning, apply the
tampon.

Orifice not dilated,
and not dilatable.

Membranes { Same remedies as at
ruptured. { A, then refrigerants.
Then ergot, if pains
be weak and feeble.
In case these fail,
compression of the
uterus, the tampon,
and forced delivery.

This case is very perplexing; the application of the tampon requires caution. In fact, when the vagina is closed, the blood might accumulate in the uterine cavity without great care, and the patient might die without a drop of blood being seen externally; and the danger will be greater in proportion as the uterus has been more developed before the rupture of the membranes, and the contractions more feeble. The application of the tampon, then, should not be preferred to manual delivery, except when the uterus contracts strongly, and when, at the moment of rupture of the membranes, only a little water escapes from this viscus; and its application should be carefully watched, and a bandage should be applied, tight enough to prevent the enlargement of the uterus. On the contrary, when the contractions are feeble, and a large quantity of water escapes at the rupture of the membranes, we must overcome the resistance of the orifice, and turn.

Hemorrhage
severe.

Here, also, we may be surprised at the direction to rupture the membranes, and wait, before proceeding, until the retraction of the uterus has or has not arrested the hemorrhage; in fact, we think it so very important to the mother and child, that the latter should be born by the contraction of the uterus, rather than by a difficult manœuvre, that it is very desirable to run the chance of spontaneous delivery whenever we can hope for it. It is well understood that this delay is admissible only in cases where the uterine contractions are neither feeble nor infrequent. If the neck be thin, sharp, incisions should first be made on each side of the orifice.

Membranes { Rupture the mem-
entire. { branes; if this is not
sufficient, turn or ap-
ply the forceps.

Orifice dilated, or
dilatable.

Membranes { Turning, if the head
ruptured. { be above the orifice.
Forceps, if the head
have descended into the
cavity. Simple deliv-
ery, if the pelvic ex-
tremity present.

We might here use the forceps; but when the head is above the orifice, and not in the cavity, the use of this instrument is so difficult, that turning seems preferable.

venting the flow of blood; then its presence on the neck of the uterus irritates this lower part of the organ, and solicits the reaction of the upper portion, which contracts, and causes the orifice to dilate. Then, when the tampon is withdrawn, we find the passages prepared, and the membranes may be ruptured. The latter operation alone will often arrest the hemorrhage, and if not, the fœtus must be extracted. If the tampon do not cause the dilatation of the neck, it would certainly favour its thinness, and then it would still be possible to rupture the membranes, because, if this rupture be inefficient, the neck, although not dilated nor dilatable, will permit delivery to take place, in cases of imminent danger, by first cutting the sides of this thin orifice.

But to obtain these results, the tampon must remain in the vagina at least an hour or two, and until it has induced strong contractions. Farther, the longer it is applied the more advanced shall we find the labour. The length of time for its application should be based on the state of the neck at the time it is tamponed, and on the strength of the contractions while it is applied.

Unfortunately, the remedy cannot always be borne by females. Sometimes it causes an insupportable feeling of tenesmus in the rectum and bladder, and soon after its application the female will beg you to remove it. In those cases, however, where the tampon is indispensable, we must encourage them to bear it for a few moments, by pointing out the necessity of its application, and not withdraw it until its presence becomes intolerable, and leads to symptoms more dangerous than hemorrhage, which is fortunately very rare. I have enlarged, also, on the mode in which ergot is administered. Dubois much prefers the dilatation of the orifice by lateral incisions of the neck to forced parturition, but they cannot

and the tampon; the state of the neck, which, notwithstanding the ergot, would not allow me to expect a rapid dilatation under the influence of the rupture of the membranes, decided me in favour of the tampon, which I applied with a speculum. Pledgets of lint, tied with thread, were pushed into the vagina as I withdrew the speculum. Finally, when the vagina was entirely filled, I applied a T bandage firmly to keep it in place. We then administered a drachm of ergot in two doses: by means of these remedies the external hemorrhage did not cease entirely, but powerful contractions supervened, and in an hour or less the efforts of the female partially expelled the tampon, and the membranes were ruptured: we removed the lint and bandage, but found the pelvic extremity at the orifice instead of the head, as I had imagined. The dilatation being almost complete, I introduced the hand immediately, and grasped the feet of the child; the delivery was rapid, but the hemorrhage had compromised its life, and, after a few inspirations, it died. The mother recovered perfectly, the hemorrhage ceasing with the delivery of the child.

February 2, at half past nine o'clock, Madame Mozanot, thirty-five years old, having borne seven children at the full term, and had one miscarriage at three months, which had required the tampon for three days, was attacked with repeated hemorrhages in the last three months of this eighth pregnancy. When eight months advanced, the hemorrhage was severe, and in this state she was brought, at half past nine A.M., to the *salle des accouche mens*. The neck was soft, dilated to the size of a five-franc piece, and the placenta was inserted on the left of the *os tincæ*. M. Dubois immediately tamponed her, say about ten o'clock: at twelve, in consequence of frequent faintings, he administered a drachm of ergot in Malaga wine, but as the female continued to grow feeble, and farther hoping, from the nature of the contractions and their duration, that the neck was dilated, he withdrew the tampon; and, in fact, the neck was sufficiently enlarged to permit the labour to be terminated: twenty minutes after twelve, M. Dubois turned by the feet; the child was dead, but the mother recovered.

In a case almost similar, April 29, the rupture of the membranes brought on labour, the hemorrhage ceased, and the child was dead. If my limits permitted, I could adduce many more cases, showing that this symptom is more fatal to the child than to the mother.

be had recourse to unless the undilated neck is thin. On the contrary, where the neck preserves its thickness, these incisions are useless. Dubois recommends them to be made, also, only on the sides of the orifice; an extremely important precept. In fact, the bladder and rectum might be endangered by the prolongation of these incisions, during the delivery of the fœtus, were they made anteriorly and posteriorly. Farther, they should not be deep, extending only a few lines; the passage of the hand and the child will do the rest.

In making these incisions, Dubois uses a convex-shaped, probe-pointed bistoury, with a long handle; the instrument glides along the index finger of the left hand, which answers for a guide, for an incision on the right and left side. A straight, probe-pointed bistoury might be used, but in this case the blade should be protected by a thin strip of linen, and should be left exposed only for two or three lines at its extremity.

This precaution is as necessary for the parts of the mother as for the finger of the accoucheur.

Refrigerants, as I have already stated when speaking of abortion, should not be used over the whole body, but only on the lower extremities, while the upper parts should be warmed, to keep as much blood as possible in the organs essential to life; this produces, at the same time, a very useful revulsive action.

The membranes, as has been seen, should not be ruptured, except in cases where the neck, although not dilated nor dilatable, is, however, thin enough for us to expect dilatation soon. If, on the contrary, the neck be thick, and a long time must elapse before its dilatation, it is better to use the tampon immediately. In fact, suppose the neck of the uterus was thick, and the membranes were ruptured without arresting the hemorrhage; as the state of the neck does not permit us to penetrate into the uterus, the female will remain exposed to the dangers of hemorrhage until the mouth is dilated, for we can hardly use the tampon in this case without fear of substituting internal for external hemorrhage. We could not, as I have said, prefer the tampon to forced labour, after the rupture of the membranes, except in cases where the uterus is powerfully contracted, when strong pains exist, and a very small quantity of water has escaped from the uterus: here its application requires great care.

ART. V.—ECLAMPSIA DURING LABOUR.

I have stated, when treating of convulsions during pregnancy the nature, causes, diagnosis, prognosis, and treatment of this accident, and shall now mention the special modifications produced by labour in the prognosis, and the indications to be fulfilled. Thus, as in hemorrhage, the prognosis is much more serious in proportion as the orifice and external organs are less dilated, and according as the spontaneous or forced delivery is more remote and difficult: here the danger of the prognosis applies to the mother more than to the fœtus, whose life is almost always compromised

long before it is possible to act. The termination of the labour, however, is not always followed with so immediate a result for the mother as in hemorrhage; most frequently the convulsions continue after the expulsion or extraction of the fœtus.

§ 1. Treatment.

The treatment consists, first, *during the paroxysm*, as we have already said when treating of *convulsions during pregnancy*, in keeping the tongue in the mouth, so that it may not be bitten; then, *after the paroxysm*, in employing the means already enumerated, as general and local bleeding, purgative enemata, antispasmodic potions, revulsives to the extremities, &c., &c.; and especially, while all these remedies are used, the accoucheur should deliver the fœtus, if possible; in these cases, this is the surest remedy; but, as we shall state hereafter, this delivery ought not to be made at all risks; we may frequently fail, and where we succeed the remedy might be worse than the evil. The violence requisite might aggravate the convulsive symptoms in most cases. The special treatment consists in delivering the fœtus: the processes for this vary according to the frequency, duration, and intensity of the paroxysms, and according, also, to the period of labour at which the paroxysms appear.

SYNOPTICAL TABLE OF THE TREATMENT OF CONVULSIONS DURING LABOUR.

CONVULSIONS.	Slight....	Neck not dilated, not dilatable, thick.	Membranes entire.	Rupture the membranes; distension being one of the principal causes of convulsions, we may expect to terminate them by producing contraction of the organ.
			Membranes ruptured.	Anoint the os tincæ with extract of belladonna, and wait.
		Neck dilated, dilatable.		Confide the delivery to nature, and do not administer ergot; it may aggravate the symptoms; and, farther, it is useless, convulsions causing, in most cases, very powerful contractions of the uterus.
	Severe...	Neck not dilated, not dilatable, thick.	Membranes entire.	Rupture them, belladonna, and wait.
			Membranes ruptured.	Belladonna; forced delivery has been urged; but this remedy is often more dangerous to the mother than the convulsions; therefore abstain from it.
		Neck not dilated, but thin.	Membranes entire.	Rupture them, belladonna, wait.
			Membranes ruptured.	Belladonna, then incisions on the sides of the orifice, and deliver the fœtus by turning or the forceps.
		Neck dilated or dilatable.	Membranes entire.	Rupture them and deliver the fœtus.
			Membranes ruptured.	Deliver.

Remarks on the Treatment.

In most cases, we may say that the general indications of cure, and the special treatment laid down in the above table, are attended, most frequently, with a fortunate result for the mother, but much less fortunate for the child.

I have verified this fact by observations in the city, and in thirteen cases of convulsions at La Clinique. I have also noticed other cases, the details of which are not without interest.

In November, 1841, I was requested by Dr. Clair and a midwife, in my neighbourhood, to visit a female in labour with her first child, attacked with convulsions. When I arrived, the female was in a coma, which had followed the third paroxysm; the child was living; prompt action was important, and very fortunately the head had descended into the cavity, and had nearly completed its rotation: the occiput, however, was a little on the left. The application of the forceps was very easy (I began with the pivot blade), and the child, a female, was delivered alive, and did well. The mother, however, had frequent paroxysms the whole of the next day, notwithstanding the attentions of Dr. Devilliers, who was likewise called to her. The second night was passed in a state of furious delirium, followed by profound coma, which continued till the next morning. After this she recovered completely. In this case, the termination of the labour saved the child; but the convulsions continued, and even increased. In eleven other cases, noticed at La Clinique,* I observed the same thing seven times. I also remarked that in the thirteen females, nine were primiparæ, seven dropsical; two pregnant with twins; one was attacked during pregnancy; ten during labour; two after parturition; one at five months; one at seven months; three at eight months; one at term. In three only the precursory signs were noticed; in eight the forceps were used; in one manual delivery was practised; four were delivered spontaneously; only two died; ten children died; one came into the world putrefied, and two lived.

ART. VI.—RUPTURE OF THE UTERUS.

Rupture of the uterus is the most formidable accident which can occur to the female in the puerperal state; it is sometimes followed by instant death. The uterus may be ruptured at its fundus or supra-vaginal portion.

§ 1. *Predisposing Causes.*

We may regard as predisposing every cause which increases the distension of the uterus, or diminishes the resistance of its parietes; such as twin pregnancies, dropsy of the amnios, debility of certain parts of the organ without any known cause, or which may be produced by gangrenous alterations, by atrophy, apoplexy, acute or chronic inflammation of the organ, or scirrhus alteration.

§ 2. *Efficient Causes.*

The efficient causes are, powerful contractions of the uterus to overcome a mechanical obstacle to labour, such as the contraction of the pelvis, a bad presentation of the fœtus, lesions by external causes, as falls, blows, wounds; finally, lesions by internal causes,

* Biron, f. Prunet; Cossard, f. Jaquin; Bourson, f. Judaine; Nachon, Geoffroi, f. Herbaux, Lessort, Raboutet (Bl., M. M. 14 Septembre, 1840.) (27 Septembre, 1840.)

among which we must place in the first rank unskilful obstetrical manipulations. In fact, how many times has this last circumstance caused the death of the female, who would have survived in skilful hands! M. Voillemier and M. Cazeaux found once, in an autopsy, a laceration of two thirds of the uterus after the application of the cephalotribe. An old interne of the hospitals twice detected the same thing after the use of this instrument. It is not surprising, therefore, that unskilful operators condemn this instrument, which is so valuable when properly used.

§ 3. *Symptoms.*

The female suddenly utters a piercing cry, and complains of a most intense pain, like a cramp, in the place where the rupture occurs; she becomes pale, the pulse flags, is almost imperceptible, general insensibility follows this state of inexpressible anguish, and the female faints. The pains suddenly cease, the abdomen becomes supple, depressible, and frequently the fundus of the uterus cannot be felt at its usual height; but we feel in its place the parts of the fœtus, while the contracted uterus is depressed into the hypogastric region.

If we examine per vaginam if the bag of waters be unbroken, and were prominent before the accident, we feel that it is flaccid, although the waters have not escaped; we ascertain also that the foetal part, which occupied the superior strait, is no longer there; it seems to me impossible to feel the displaced foetal parts through the cul-de-sac of the vagina. But if the dilatation of the orifice permit the introduction of the hand into the cavity of the uterus, this hand often ascertains that the fœtus has disappeared, that in its place are folds of the intestines; but most frequently there are some parts of the fœtus within the cavity of the organ, and we can follow those which have escaped into the abdominal cavity through the fissure of the uterus. If, however, the fluids alone are diffused into the peritoneal cavity, if the fœtus be not displaced, the fissure of the organ is closed by its contraction, and no light is thrown on the question by touching; but the external phenomena and rapid death establish a diagnosis in this case which is confirmed by autopsy.

§ 4. *Prognosis.*

The prognosis of rupture of the uterus is very alarming; this accident is often followed by instant death, but most generally death occurs after a few hours, in consequence of hemorrhage or peritonitis. This accident is much more serious before than after the rupture of the membranes; in fact, after the discharge of the waters, we need not dread their effusion into the cavity of the peritoneum; the blood which comes from the wound, or the separation of the placenta, can alone be effused into it.

Some females, however, escape all these dangers. Dubois was sent for one day to La Maternité in a case of this kind. The patient, mother of seven children, had been only an hour in the salle d'accouchement, when suddenly she uttered a piercing cry, and

complained of pain in her right side. Her face was pallid, and suddenly sunk, her eyes were suffused, the pulse was depressed; and the head, which had previously presented at the os tincae, could no longer be felt. M. P. Dubois turned the child, but found the feet in the abdomen; the operation was performed easily; after removing the fœtus, he again introduced his hand, penetrated more anteriorly into the cavity of the peritoneum, and even pushed back some folds of intestine which tended to engage in the opening. On the fifteenth day the patient was discharged cured.

§ 5. *Treatment.*

The rupture of the uterus is serious only from the alarming accidents it causes, and which result from the effusion of the amniotic fluid and blood into the cavity of the organ, and thence into the peritoneum. The accoucheur, as soon as he detects the accident, should immediately deliver the fœtus, and thus permit the uterus to contract, and, consequently, the union of the laceration, conforming, however, to the following rules:

1. If the fœtal parts be not displaced, we should deliver by turning or by the forceps; in case of contraction of the superior strait or excessive size of the fœtus, as the mother will almost certainly die, gastrotomy should be performed to extract the fœtus if it be alive; if dead, or if we think it is not viable, the size of the fœtal parts must be diminished in order to extract them.

2. When a part of the child is still within the uterus, if it be the feet, we must draw on them, and remove the fœtus. If these parts have passed into the peritoneal cavity, the hand must reach them; and in this case, the contraction of the uterus will never be powerful enough to prevent the hand, when it has entered this organ, from following the parts of the child through the rupture which these parts still keep open. I cannot think that the proposition to introduce the hand into the uterus with a bistoury to enlarge the opening, and thus overcome its contraction, was made seriously.

3. When the whole fœtus has passed into the peritoneal cavity, we must still attempt to reach it through the laceration, and remove it through the natural passages. In all cases, after the removal of the fœtus, the hand should be introduced into the uterus, to ascertain that no hernia of the intestines exists, and to reduce it in case it has occurred.

The rest of the treatment is embraced in that of uterine hemorrhage and peritonitis.*

* Within the last twenty months I have seen *five* cases of rupture of the uterus. This is a fearful number, and the proportion is far too great for them all to have been spontaneous or unavoidable. Unfortunately, several of them were the direct consequences of gross mismanagement. Never can I forget the melancholy scene which I witnessed about eighteen months since in a case of this kind. I was requested to visit, about five miles from the city, a poor woman, who had been in labour thirty-six hours. From the commencement of her labour she had two medical gentlemen with her, and, for reasons which I trust were satisfactory to themselves and their consciences, they determined on the use of the perforator. This instrument was accordingly thrust into the brain of a living child; the labour, however, did not advance, and they proceeded to remove the fetus piecemeal. After four hours' work they succeeded in bringing away the whole of the fœtus in a mangled condition, except the head, which was still in the womb. The friends of the unfortunate sufferer became

ART. VII.—RUPTURE OF THE VAGINA.

The rupture of the vagina is much less formidable than that of the uterus; if, however, it occur at the upper part, near the insertion of the uterus, it may give rise to accidents almost as fatal. On the contrary, the lacerations of the central and lower part of this canal, or vesico and recto-vaginal fistulæ, are not of a char-

alarmed; their confidence was lost; and the serious apprehensions entertained for the safety of the woman induced them to call in additional aid. I was sent for; and, hearing the particulars of the case as far as the messenger could communicate them, I hastened to the house, accompanied by Dr. Busteed and two of my pupils, Messrs. Burtzell and Cook. On entering the room of the unhappy woman, a scene disclosed itself at which the heart sickens. The patient was pale and exhausted; her countenance was that of a dying woman; she was almost pulseless, with cold extremities, and the perspiration of death on her. She begged us to relieve her, and said she was willing to undergo any suffering if she could only be spared to her children! Poor creature! had she known that she was about being removed from her children by the atrocious butchery of men to whom she had confided her life, she would not have made the appeal she did. In approaching the bed of this *murdered* woman, and in attempting to make a vaginal examination, to ascertain the condition of the womb (the head of the fœtus being still within its cavity, having been separated from the trunk), the reader may imagine my feelings on finding a mass of small intestines protruding from the vagina, and lying between the thighs! Such was the fact. The operators had not contented themselves with slaughtering the infant, but they ruptured the uterus, through which the intestines had protruded, and in this condition had abandoned the woman!! From what I could learn, she lay in this situation for three hours before I saw her, the doctors having left the house, stating that nothing more could be done!! Verily, death does terminate all human effort.

Why was embryotomy had recourse to in this case? I never could ascertain. There must have been some secret reason for it; perhaps the burning love which some men have for the eclat of *bloody deeds*. There was no deformity of the pelvis; the head of the fœtus was of the ordinary size; and, as far as I could learn, it was nothing more than an ordinary protracted labour; the pains had not been severe, and there was not sufficient expulsive force to deliver the child; the doctors judged it advisable to *do something*, and they determined to turn and deliver by the feet. They accordingly proceeded; and, mistaking a hand for a foot, pulled it down into the vagina. They were then foiled; and, in order to complete the tragedy, they commenced the horrid business of cutting up the fœtus, and extracting it piecemeal! Thus were two lives wantonly sacrificed. The poor woman died in about two hours after I arrived, and, half an hour before she sunk, she observed, "*My poor baby was alive, for I felt it move when the doctors were tearing it away from me.*" Such language, uttered under such circumstances, was indeed calculated to awaken the reflections of the actors in this scene of carnage, and point out to them the magnitude of their guilt. This may seem a harsh expression on my part, but, in the name of justice, is it not merited?

Rupture of the womb sometimes occurs spontaneously. Dr. William Power, a gentleman extensively engaged in the practice of midwifery, requested me, about a year since, to see a case of this kind with him. The female had previously borne several children. She sent for the doctor at the commencement of her labour, and everything appeared to be going on favourably. The delivery was not much advanced; the doctor left her, stating that he would return in two hours. He did so, and found a marked alteration in the condition of his patient. She was vomiting, almost pulseless, with clammy perspiration and cold extremities. I arrived soon after the doctor's second visit, and our opinion was that these symptoms were induced by rupture of the uterus. Indeed, the child could be distinctly felt through the abdominal walls, having escaped through the rent into the cavity of the abdomen. The woman died in three hours from the time I saw her. At the request of the doctor, and assisted by one of my former pupils, Dr. Busteed, I opened the abdomen as soon as she expired, with the remote hope of saving the child, but it was dead.

Dr. Bernhisel, of this city, sent for me, about ten months since, to see Mrs. M., who likewise had spontaneous rupture of the womb. She was the mother of several children, and had been much enfeebled by antecedent ill health. The doctor arrived about three hours after the commencement of her labour; he made an examination, and found the head descending in the pelvic cavity, and everything promised a favourable delivery. He informed me that, while sitting by the bedside, he distinctly heard something *snap*; immediately vomiting and symptoms of collapse ensued. I was sent for, and the doctor and I concurred in opinion as to the nature of the case, he having previously expressed to the friends his fears that rupture had taken place. The indication in this instance was to deliver immediately with the forceps (the head being in the pelvic excavation); and the doctor assenting, I delivered her without difficulty of a fœtus of ordinary size. The child was dead, and, from its appearance, must have been so for several days. The mother succumbed ten hours after delivery. In a preceding note, I mentioned a case of rupture of the uterus in consequence of the administration of ergot, and the subsequent attempts of the physician to produce *version*.

acter to endanger the physical existence of the patient, but they compromise her happiness. I shall attend to these accidents when speaking of the consequences of lying-in.

Lacerations of the Superior Part of the Vagina, or Rupture of the Natural Relations which unite it to the Uterus.

A. *Causes.*—The passage of the fœtal parts, in cases of disproportion of the fœtus with the pelvis, the application of the forceps where the blades have been badly guided, and which have perforated the cul-de-sac of the vagina, the too rapid* and violent repulsion of the parts of the child at the moment of entering the uterus to turn, especially when we have not taken the precaution to support the fundus of the organ with the other hand applied externally.

B. The rupture of the upper part of the vagina is marked by the same phenomena as those showing a rupture of the uterus, only the symptoms are less intense; sometimes even the pain produced by the laceration is so slight that it is confounded with that caused by the contraction of the organ. If the rupture occur at the upper and back part of the vagina, the fœtus also may pass partially into the peritoneal cavity; as the peritoneum covers, at this point, a large part of this canal, the neck of the organ then ascends and leaves the fœtal parts. Thus, when the head has passed into the cavity, and occupies the lower part of the vagina, if a rupture occur at the upper part, the lower extremities of the fœtus may escape through the rupture, and penetrate into the peritoneum. The same may be the case with the head, when the breech has passed into the cavity: finally, the head or the feet may enter there when the shoulder presents; but the touch can hardly recognise this accident before the extraction of the fœtus. If it occur when one of the fœtal parts occupies the lower part of the vagina, it would not be possible to detect it, except in cases where the rupture is caused by mechanical violence before the descent of the fœtus.

C. The prognosis is much less serious than in the preceding case.

D. The treatment consists in extracting the fœtus and controlling the complications.

* This repulsion should always be made slowly and carefully: in most cases, especially in presentations of the shoulder, the hand can enter the uterus, between the superior strait and the parts which are in it, without this repulsion.

CHAPTER IV.

DIFFICULTIES RESULTING FROM ANOMALIES IN THE MECHANISM OF LABOUR.

ART. I.—ANOMALIES IN THE FIRST PERIOD OF FLEXION

THE two fontanelles are always on the same plane; the anterior fontanelle is not very difficult to reach, nor, in fact, inaccessible, as occurs after flexion.

I have stated, in the article *Anomaly in the Mechanism of Spontaneous Delivery by the Vertex*, that the period of flexion is very seldom deficient; that when it does not occur, the descent of the head still takes place in most cases. I will add, that in order for the descent of the vertex not to occur, flexion having failed, either the head must be excessively large, or the diameters of the pelvis small. Even in this case, the flexion will not always be deficient, because it will be the more disposed to take place as it is more necessary to the descent. Finally, if, by a very rare exception, it be deficient, and the descent, in consequence of a slight disproportion between the pelvis and the head of the fœtus, cannot occur, after waiting for uterine pains as long as is proper, after quickening them, if necessary, with ergot, if they be slight, we must introduce several fingers of the hand, the palm of which looks to the face of the child, and try to raise the forehead in order to flex the head. In case we fail, the forceps should be used. But I repeat it, this coincidence of defect in flexion, with a contraction of the superior strait, or an excessive size of the head, is very rare: flexion will occur more readily, the greater the obstacle to its descent; and if action be necessary, it must be ascribed rather to the mechanical obstacle at the superior strait than to an anomaly in the period of flexion.

ART. II.—ANOMALY IN THE SECOND PERIOD OF THE DESCENT.

The period of descent cannot fail by itself, and its accomplishment can be obstructed only by foreign circumstances.

Such are, inertia of the uterus, deformities of the superior strait, inordinate size of the fœtal head, the resistance of the os tincæ, or mal-presentation of the head (rare), &c., &c. All these accidents will be discussed separately in the chapter on mechanical obstacles to parturition.

ART. III.—ANOMALIES IN THE THIRD PERIOD OF ROTATION.

I have already dwelt at length on the anomalies of this period of rotation. We have seen that, in presentations of the vertex, nature alone is sufficient in most cases; that the head can be expelled when its rotatory motion is not entirely effected; that when the occiput is posterior, spontaneous delivery of the fœtus is still the rule. But if the head be arrested in its rotatory movement, diagonally, the occiput on one of the two sacro-iliac symphyses, or behind one of

the two cotyloid cavities, and if the head be not small, nor the pelvis large, the head cannot descend. The difficulty would be still greater were the head to be arrested transversely. When there are powerful contractions, and we cannot, consequently, attribute to inertia the defect in rotation, we are very much embarrassed to ascertain its cause: it may depend on an excessive size of the head, the resistance of the perineum, a particular position of the head, &c. Farther, whatever may be its cause, art is obliged to interfere with the forceps, which alone can complete this movement of rotation.

ART. IV.—ANOMALIES IN THE FOURTH PERIOD OF DESCENT.

As we may well suppose, this fourth period cannot fail of itself; the want of rotation to which I have alluded, the resistance of the external parts, the inertia of the uterine contractions, the contraction of the inferior strait, are circumstances which alone can prevent the delivery of the head. I have already spoken of uterine inertia: the other causes will be treated of particularly in the following chapter.

ART. V.—ANOMALIES IN THE FIFTH PERIOD: EXTERNAL ROTATION OF THE HEAD, INTERNAL OF THE SHOULDERS.

It is rare, as we have remarked in the same article when speaking of spontaneous delivery by the vertex, that art is obliged to interfere for a want of rotation in the shoulders. When they present diagonally, they descend readily, and often are even delivered transversely; but if a disproportion exist between the bis-acromial diameter of the shoulders and the transverse diameter of the inferior strait; if to this circumstance be added too great resistance of the perineum, or, as frequently happens, a deficiency in the expulsive efforts, the accoucheur should rotate the shoulders and bring them down. He should first wait a few minutes, unless the child appears in danger, and then should pull slightly on the head of the child, directing the occiput to the left, if, before the delivery of the head, the position were the left occipito-iliac; to the right, if the position were opposite. If these slight tractions be insufficient, in cases where the occiput was originally on the left, the accoucheur introduces the index finger of the right hand as deeply as possible *on the shoulder*, which is on the left of the pelvis, so as to hook the finger, if possible, in the axilla, and the index of the left hand *under the right shoulder*, which looks to the right of the pelvis: then, by depressing the right index finger, and elevating the left, he moves the shoulders in opposite directions, bringing that on the left into the cavity of the sacrum, that on the right under the pubes; then the index finger of the right hand impresses on the shoulder, on which it remains fixed, a motion of traction and elevation, by which the fœtus is delivered. If the occiput were primitively on the right, the left index finger should be placed over the shoulder on the right of the pelvis, the right index finger under that on the left of the pelvis.

CHAPTER V.

MECHANICAL OBSTACLES TO PARTURITION.

ART. I.—RESISTANCE OF THE MEMBRANES.

I HAVE already shown that the resistance of the membranes may retard parturition indirectly, by causing inertia of the uterus. This resistance of the bag of waters may be, of itself, a mechanical obstacle to parturition. Thus, sometimes the membranes are so thick and solid that they resist the contractions of the uterus, although these may be very strong, and then parturition is singularly retarded: sometimes, but rarely, nature is unable to surmount this obstacle, and art is then compelled to interfere.

Rupture of the Membranes.

As soon as the uterus is perfectly dilated, the accoucheur takes advantage of a pain, grates the membranes with the nail of the index finger, and ruptures them; but this can seldom be accomplished in the case we are speaking of, viz., when the membranes are very firm. Most generally we are obliged to use the process of M. P. Dubois, which is certain, safe, and easily performed. A quill pen is introduced on the index finger of the right hand to the membranes, and at the moment the membranes project very convexedly, the pen is pushed with the left hand, and the bag of waters is torn at this point. This is all that is necessary, and the membranes will never be so firm or thick as to require the use of any other instrument, as a bistoury, or sharp-pointed probe, &c., which should be carefully avoided. These instruments are managed less easily than the pen, and if a fistula should be formed by the long-continued pressure of the head of the fœtus on the vesical or recto-vaginal wall, it would naturally be attributed to the use of the instrument.

ART. II.—OBSTACLES DEPENDANT ON THE NECK OF THE UTERUS.

§ 1. *Agglutination of the External Orifice.*

The agglutination of the external orifice of the uterus is much more frequent than is generally supposed. If it be often unnoticed, it is because nature most usually overcomes it. This agglutination seems to be caused by the inflammation of the surfaces in contact, which are frequently united by a more or less resisting pseudo-membranous or fibrous tissue.

This agglutination may be detected by the following signs: 1st. There is no orifice for the introduction of the finger, but in place of this orifice there is a small hollow fold, depressed in its centre, which is filled with cellular tissue. 2d. This agglutination may

also be suspected by the propulsion of the lower segment of the uterus into the cavity of the pelvis, at the commencement of labour.

In fact, if nature generally conquer this obstacle, and the orifice of the uterus finally open, it is not till after violent and long-continued pains, by which the lower part of the organ is often forced low down into the cavity of the pelvis. This distended part frequently becomes so thin that we imagine that only the membranes of the ovum are interposed between the finger and the head.

The distension is so great that the uterus would finally be ruptured if the agglutination of the neck were not destroyed by nature or in some other way. In cases where nature is insufficient, these adhesions may often be removed by the end of the finger. Hence, this state of things should be remedied at the beginning of labour, or as soon as recognised, in order to spare the female those severe pains which might, of themselves, possibly remove the difficulty. By this wise course, also, we avoid the troublesome consequences of the propulsion of the lower segment of the uterus.

§ 2. *Complete Obliteration of the Neck of the Uterus.*

The neck of the uterus may be completely obliterated, in consequence of the intimate union of the two lips of the orifice. This union may be caused by an inflammation of the neck supervening after impregnation, and may be so intimate, that the uterus will be ruptured in some other point, sooner than give way at the place of this adhesion. As soon as we ascertain that the contractions of the uterus will not overcome this obstacle, and that the symptoms do not depend on a posterior position of the neck, but are caused by the accidental absence of this orifice, an incision should be made in the anterior part of the lower segment of the uterus. (See *Vaginal Cæsarean Operation.*)

§ 3. *Rigidity of the Orifice.*

From the commencement of labour, the orifice of the uterus is sometimes firm, rigid, and painful to the touch; hot, although very thin, and apparently easy to be dilated: nevertheless, it does not open, and the female is annoyed by very sharp pains in the loins; a symptom most generally attending rigidity of the neck of the uterus, and seemingly a consequence of it.

Sometimes this state of rigidity does not appear till at a more advanced stage of labour. The orifice, which had begun to dilate, contracts little by little, closes, and prevents the descent of the head of the foetus; or it manifests itself when the head has entered the cavity of the pelvis, either before the contraction of the neck, or in overcoming its resistance; the orifice then contracts on the neck of the child, and prevents the passage of the shoulders.

This phenomenon, termed *spasm of the neck, spasmodic contraction*, as also rigidity of the orifice, is often connected with a state of plethora, and yields frequently to general bloodletting and baths. Emollient injections and fumigations are useless: I have always known them to fail. Belladonna, however, is frequently very use-

ful, and should be employed in the form of the extract, about the consistence of soft wax: of this, a small mass should be placed on the nail of the index finger, and introduced to the neck of the uterus. The heat and mucus liquefy the extract, which may then be spread over the whole inner surface of the orifice. When this remedy succeeds, its effect is generally instantaneous; ten or fifteen minutes after it has been used, the neck loses its rigidity, and dilates. I remember very distinctly the first time it was used by M. P. Dubois, on account of another important fact connected with it. At this time, I accompanied Dubois to the Maternité hospital. Two females were in the parturition ward; in one, the uterine orifice had been dilated to the size of a two-shilling piece since the morning, and had resisted very powerful contractions. Dubois used the belladonna in this case, and then came to the second female to observe the mechanism of spontaneous evolution, the *foetus* being from the sixth to the seventh month.* The child was putrefied and softened; the pains were strong; the parts in a good state; and this spontaneous expulsion, the shoulder presenting, required only a few minutes for its termination. During this short space of time, the dilatation in the first female was nearly complete.

October 22, 1840, Guilleron was taken in labour at 7 A.M.; in the evening, at twenty minutes before 9, the orifice had not dilated, although the pains were very severe; it was rigid, tense, projecting far backward, so that it was very difficult to introduce the finger. The midwife used belladonna, as directed by M. P. Dubois; in ten minutes the dilatation was complete, and the head passed the orifice.

This remedy, however, is not infallible: I have frequently used it unsuccessfully, and whenever I have known it to succeed, it has acted immediately.

The rigidity may depend on a morbid alteration of the neck of the uterus, which has destroyed the extensibility of the fibres of this part; in this case, nature herself is sufficient. Dilatation takes place at the expense of the sound portion; the other splits and tears to give passage to the *foetus*. If the whole neck be fibrous or scirrhus, the same effect may still be produced; but in this case, the lacerations may extend, and affect the body of the organ, which, as is well known, is a very serious accident. Therefore, if this state resist baths, bleeding, belladonna, as will generally be the case, incisions must be made on the sides of the orifice with a convex bistoury, or a straight, probe-pointed bistoury, which should be guided by the finger into the neck of the uterus. In these cases, it is expedient to make many incisions, in order that sufficient dilatation may exist, without danger of their extending too far. To avoid the consequences of this accident also, these incisions should not be made at the anterior and posterior parts of the orifice. In fact, if extended in this direction, they might affect the bladder or the rectum. I have seen this slitting of the orifice followed by

* It was under the impression of the possibility of expulsion by the trunk that I drew for Dubois the figures of spontaneous evolution published in this work.

the best effect, either in females where the only obstacle was a pure and simple rigidity of the neck, or in those where the parts were more or less diseased.

In a young female, seventeen years old, who was confined at La Clinique, the neck was healthy, but so rigid that incisions were required. The child was born in an unreduced posterior occipital position.

The incisions also were indispensable in a case of parturition in an aged female, the mother of ten children; the neck was so much diseased, that at first it was thought the placenta was inserted on the orifice.*

In fact, a spongy, tender, friable, bleeding substance could alone be felt.

§ 4. *Faulty Direction of the Orifice.*

It frequently happens that the orifice of the uterus does not occupy the centre of the pelvis, and this depends on the forced inclination of the body of the organ, or on the abnormal insertion of the orifice on the lower segment of the uterus. When speaking of *Uterine Obliquities*, p. 250, I have stated the course to be pursued in both cases.

The body of the organ should be carried into its natural direction at the same time that the neck is brought to the centre of the pelvis. Where the insertion of the neck is abnormal, we are frequently obliged to support at each pain the anterior lip, which opposes the passage of the head.

ART. III.—DESCENT OF SOME OTHER PART OF THE FŒTUS AT THE SAME TIME WITH THE HEAD.

§ 1. *Descent of the Head and Forearm.*

Sometimes an arm loses its natural relations, leaves the anterior part of the chest, and enters the superior strait with the head. This occurrence is not extremely rare, and, in most cases, it does not prevent the spontaneous termination of the case. As the expulsion of the fœtus takes place as rapidly as if this accident did not exist, it may pass unnoticed until the moment when the head and arm are expelled simultaneously.

M. P. Dubois was once obliged to go to Bellevue, and left in my charge, in the parturition ward, a female in whom the arm presented simultaneously with the head, and where every effort to reduce the arm was unsuccessful. This was the first parturition, and she had been in labour for three hours: it was then one o'clock in the day. At four, Dubois returned, and found the labour terminated without any interference on my part, so easy had been the descent of the head and arm.

In another case, I observed the same result, but the labour was longer and more difficult.

* I have frequently found the best effects from emet. tart., given in solution to tolerance, in overcoming rigidity of the uterine orifice, where the rigidity is not dependant on disease, but simply a resistance of the muscular fibre.—Ed.

I might cite many instances of presentation of the arm which were not recognised until the head passed through the vulva.

Sometimes, however, this presentation of the arm retards the progress of the head, but nature finally triumphs over all difficulties, and the head comes down. Not unfrequently, however, when it reaches the floor of the pelvis, its rotatory motion is impeded by the presence of the arm, and, consequently, it cannot be expelled. Art is then obliged to interfere.

May 7, 1835, I assisted, at La Clinique, at a labour where this occurred; the peculiar position of the arm, and the readiness with which it passed down, prevented this presentation from being detected, or even suspected. The head remained for a long time on the floor of the pelvis, but it did not execute its rotatory motion. As the real cause of the delay was unknown, it was naturally attributed to the weakness of the contractions of the uterus (they were feeble), or to the resistance of the perineum. M. Dubois applied the forceps.

The blades were introduced easily; the delivery was readily performed, and all were surprised to see, when the head passed through the vulva, that the arm was engaged in the instrument; and it was then found that the presentation of the arm alone prevented the movement of rotation.

Finally, from these cases, and others which we cannot insert here for want of space, we may say that the coming down of the arm is an accident not very serious in itself, and that, if it offer a serious obstacle to the progress of the head, it is only from a contraction of the superior strait, or from the excessive size of the fœtus. In fact, the bi-parietal diameter, the extent of which is at most three inches and a half, is generally increased seven lines by the presence of the arm, and this diameter, in a well-formed pelvis, may pass through the superior strait, notwithstanding this increase, which does not make it in all more than four inches.

We must admit, that if, in most cases, the entrance of the head into the pelvis and its delivery may take place spontaneously, they are also sometimes retarded: the delivery even may be entirely prevented in consequence of the impediment presented by the arm to the rotation of the head.

§ 2. *Diagnosis.*

When the descent of the arm is complete, it is easily recognised; but when the head and arm are locked, and occupy together the edge of the superior strait, it is often impossible to ascertain the presence of the arm; and, farther, as we have already said, the readiness with which the head passes down most generally gives no cause to suspect this accident.

But it is necessary to establish a correct diagnosis, and, in fact, it is very important not to confound this accident with the descent of the arm in presentations of the trunk; for, in the former case, nature will almost always suffice, even when art has been unable to effect the reduction.

In the latter case, on the contrary, we must never rely on nature, which will almost always prove impotent, and we must consider the interference of the accoucheur as a rule to be observed always, with very few exceptions.

Happily, the distinction between the two cases is easy. In the former, the head occupies the superior strait, and is detected by its elastic, bony resistance, its size, and the presence of sutures and fontanelles.

In the latter, the shoulder follows the arm immediately, and is recognised by its characters; it is irregular, and we can feel the hollow of the axilla, the intercostal spaces, or the scapula, &c. (See *Diagnosis of Trunk Presentations*.)

§ 3. *Manual Operation.*

When the presentation of the arm is detected, the accoucheur should first attempt to return the arm above the head, which is frequently practicable. Sometimes, on the contrary, this is utterly impossible; we must then support the arm at every pain, in order that the head may come down alone. This descent of the head will generally occur, even in cases where we cannot support the hand and fore-arm. If the descent of the head be impossible in consequence of narrowness of the pelvis, or if, after its descent, the rotation of the head be impeded, although the pelvis may be well formed, the forceps alone should be applied. It is impossible to give very exact rules for the return of the arm; except that the right hand should be used to reduce the arm which is on the left, and *vice versa*.

§ 4. *Descent of the two Hands and two Fore-arms.*

Sometimes nature may overcome this obstacle also; but this case is more serious than the preceding, and requires the aid of art, whenever the fœtus has attained its natural dimensions, and the pelvis is not abnormally large. In short, for the fœtus to be expelled in this instance, it must be very small, or the pelvis must be very capacious. If neither of these requisites exist, the contractions will frequently be unable to effect the descent, and particularly the rotation of the head, supposing it to have descended into the cavity of the pelvis.

Here the accoucheur, who has detected the presence of the two arms at the superior strait with the head, must first attempt to return them both: if he can reduce one of them, the case becomes similar to that just mentioned in the preceding section; if neither can be returned, he must not wait for spontaneous delivery, unless it should appear very easy, but he must turn as soon as possible, lest the uterus should contract, render this operation impossible, and require the application of the forceps on the head at the superior strait. (This application, as I shall show hereafter, is much more difficult and dangerous than turning when the head is so high.)

The modes of reduction are the same as in the preceding case.

§ 5. *Descent of one Foot, or of both Feet.*

One foot or both feet may present at the same time with the head; in most cases, the head alone passes through the superior strait, and the feet remain behind; but the descent of one or of both feet may prevent that of the head. In this case, the course to be pursued by the accoucheur is as follows: if the head be high up, he should attempt to return these two extremities; if this be impossible, which is rare, after waiting for nature to accomplish all that he can expect, the right hand should be introduced; if the foot or feet be on the left, or *vice versâ*, he will pull on them while the other hand pushes back the head of the fœtus: by means of this motion in opposite directions, the pelvic extremity will be brought down in place of the head, and the rest may be left to spontaneous efforts, if the life of the fœtus be not endangered; if otherwise, the delivery should be terminated quickly.

If the head be low, it should be delivered with the forceps, being careful not to embrace the displaced limbs in the blades, in order that these may remain behind, as the head is brought into the inferior strait.

The course of the accoucheur should be exactly the same if a foot and arm present together. Thus, first attempt to return them; then, if unsuccessful, and nature is impotent, draw upon the foot or feet, pushing back the head when it is high up, and delivering it with the forceps when it is low.

In December, 1835, we saw at La Clinique a female in whom the head, left arm, and one foot presented at the superior strait. The pelvis was manifestly contracted, and these parts had been brought to the superior strait with the head, by improper attempts at turning; the uterus was contracted so firmly, that even if the pelvis had been well formed, turning should not have been attempted: the child was dead; cephalotripsy was promptly performed, and without injuring the genital organs of the mother; but she was exhausted by her long labour and sufferings, and expired a few days after her delivery.

ART. IV.—VARIETIES OF PRESENTATION.*

In describing the mechanism of spontaneous parturition, in the varieties of presentation of the vertex, I have stated as a principle, that when the vertex occupies the superior strait, nature alone is almost always sufficient to effect the descent, whatever may be the mode of presentation (whatever may be its variety of presentation). I have taken it for granted that the pelvis and head were well formed. Hence we can understand how seldom art is called upon to interfere in these varieties of presentation of the vertex. In fact, to require this intervention, we must admit a forced inclination of the head, and nature would most generally conquer this obstacle, if the pelvis were well formed, or abnormally large. Even a deformity does not always prevent the passage of

* Termed, very improperly, inclined positions.

the head. I have already mentioned the case of Vanesse, who was delivered while alone, although there was evidently a contraction of the superior strait. If, however, nature be unable to bring down the head, and art is obliged to interfere to save the female from the consequences of a long-continued labour, what course must be pursued by the accoucheur to effect delivery? The processes vary according to the variety.

§ 1. *Parietal Varieties.*

In the varieties of this presentation, the entire ear never occupies the centre of the orifice, but the ear can frequently be reached anteriorly or posteriorly, according to the position of these varieties of presentation.

a. *Anterior Parietal Varieties.*

I will suppose, first, the parietal bone is forward, and occupies the superior strait, and that the occiput is to the left or to the right.

In such a case, the accoucheur must first ascertain that the variety is not caused by a very marked anterior obliquity, which may certainly occur. If this obliquity be ascertained to exist, the uterus must be kept in its normal position during the whole of the labour. This alone will often correct the variety, or, at least, will facilitate the descent. If, after taking this precaution, the variety continue, it is independent of the inclination of the uterus. What, then, should the accoucheur do?

1. He must wait for the spontaneous descent, which will take place in an immense majority of cases. 2. If, however, the dilatation have been complete for seven or eight hours, and the descent have not occurred, notwithstanding the power of the contractions, he must interfere.

There are several modes of proceeding: the position of the head may be righted, or the child may be turned, or the forceps may be used.

A. *Manual righting of the Head.*—This is recommended in this case by every writer. Madame Lachapelle alone, while suggesting this course, remarks, that the execution of it is very difficult, and even impossible, in most cases, and that Baudelocque himself, who was very favourable to this operation, finally renounced it, on account of its difficulties. I have satisfied myself of the truth of Madame Lachapelle's opinions, and Dubois thinks that this manœuvre is not only almost impossible, but is attended with serious inconvenience.

In fact, in order to its success, we must act from the commencement of labour till the membranes are ruptured; and in this case even we may frequently fail, for the hand has not a sufficiently firm purchase on the vertex to right it readily. But suppose the manœuvre to be successful, it is not free from inconvenience nor danger.

1. The introduction of the hand into the organs of the mother at

the commencement of labour, when the external parts are not in a proper state, will be extremely painful. Added to this, the necessary manipulations will cause immense suffering to the patient.

2. When the hand is once introduced, the displacement of the head at the superior strait will favour the discharge of all the amniotic fluid; and in case the position of the head is righted, the fœtus, during the rest of the labour, will be exposed directly to the pressure of the uterus. In fact, it will be deprived of that protecting mass of fluid interposed between it and the expulsory organ, in cases where parturition is spontaneous. Nor is this all; the umbilical cord and one or both arms may pass down under the head at the moment when it is raised, and this descent is also favoured by the rapid discharge of the amniotic fluid. It is readily seen that these complications may require the immediate interference of the accoucheur, and become very serious to the fœtus, and more or less dangerous to the mother.

I have settled as a principle, that art should never interfere till the spontaneous efforts of nature are found insufficient. In this case, if the uterine contractions do not force down the head, as is generally the case in a well-formed pelvis, it will fix the head at the superior strait so firmly that it cannot be displaced unless the uterus becomes inert.

B. Pelvic Turning.—To attempt pelvic turning at the commencement of labour would not be rational in a case where so much may be expected from the contractions of the uterus. We must therefore wait, before practising this operation, till the impotence of nature is evident, and then turning is just as impracticable as righting the position of the head, in consequence of the too powerful contraction of the womb. The forceps must then be used, unless the uterus ceases to act, and permits turning to be performed.

C. Forceps.—In this case, the forceps may act in two modes: by righting the head, or by bringing it down.

a. *Righting.*—The blades of the forceps can be placed only on the sides of the pelvis, as we shall see hereafter, on giving rules for applying the forceps at the superior strait: the head will then be embraced in the diagonal position from one frontal prominence to an opposite occipital protuberance. Then, during the first tractions, it may become righted by turning on an axis, the two extremities of which terminate in each of the two ovals.

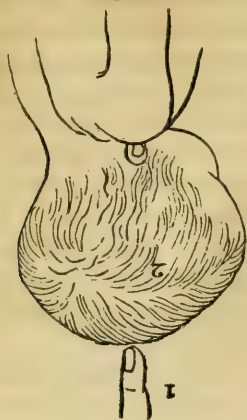
b. *Descent.*—Or the head may be seized in the same manner, and if not righted, will be brought directly into the cavity of the pelvis.*

* It has been asserted that the application of one of the two blades will be much more difficult than that of the other, because it is impeded by the depressed shoulder. This would be true, were the forceps applied regularly at the superior strait; but as it can only be placed on the sides, the inclination of the head cannot, in any manner, impede the application of the instrument.

b. *Posterior Parietal Varieties.*

If it be the parietal bone which is posterior, which presents at

(Fig. 112.)



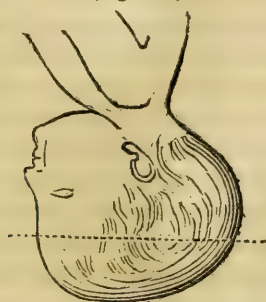
the superior strait, whatever may be the position of the vertex (whether the occiput be on the right or left), we cannot suppose that in this case the parietal variety is caused by a posterior inclination of the uterus, as this inclination cannot be admitted. The accoucheur then will regard this variety as the result of an inclination of the head on the trunk, and then the manœuvre will be the same as in the preceding case.

First wait, then attempt to right the head; and if this cannot be done, do not urge it, but have recourse to the forceps, or turning, according to circumstances.

§ 2. *Frontal Variety.*

The frontal variety is reduced spontaneously like the preceding,

(Fig. 113.)

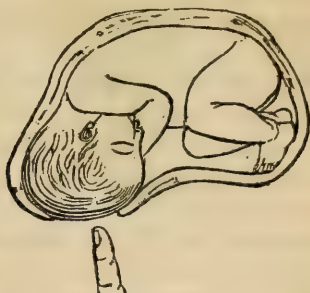


and assistance is required less frequently; for if the head continue to present without flexing, or remain slightly flexed, it will come down; the size of the diameters by which it presents justifies the possibility of this result (the occipito-frontal diameter being four inches); and if it do not occur, we must ascribe it to a cause foreign to the presentation, as, *obliquity of the uterus, weak pains, or a disproportion between the head and the superior strait.*

Uterine Obliquity.

In most cases, the frontal variety occurs because the head presents at the superior strait, not flexed, and its continuance depends also on the fact that flexion does not take place in the first period of labour; it is certain, however, that a very marked lateral obliquity may cause this variety and retard the descent, as I have recently observed.

(Fig. 114.)



It is readily seen, in this case, that the first thing to do is to restore the uterus to its normal position: this alone will remedy the variety, and the descent will not be tardy.

Insufficiency of the Uterine Contractions.

If the pains be not strong enough, we must try to make them more active.

Disproportion between the Head and Pelvis.

In the absence of other causes, it is proper to attribute delay in the descent of a frontal variety to disproportion between the head and the superior strait, even when this cannot be detected by the touch. In this case, manual reduction or the application of the forceps may be useful: I do not speak of turning, for whenever we suspect a contraction of the superior strait or excessive size of the head, this operation should not be performed.

A. Manual Righting.—If the pelvis be well shaped, the head may descend without flexing; but in consequence of the disproportion between it and the pelvis, the movement of flexion, which substitutes a more favourable diameter for one less favourable (see *Spontaneous Delivery*), becomes necessary, and we must then attempt to accomplish this flexion. Two modes have been recommended in this case: in one, the forehead is supported by two fingers during the contraction, in order to force the head to flex; this is performed the most easily, and, farther, is by no means inconvenient, but, unfortunately, it is not always successful. The cause which prevents the flexion of the head is frequently more powerful than the accoucheur, whose efforts are frustrated, as was the case with me in a face presentation, of which we shall speak hereafter. The second process is more difficult than the first; it seldom succeeds, is very painful, and not free from danger.

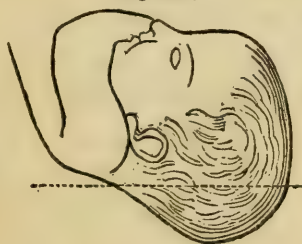
This process consists in depressing the occiput, and thus forcing the head to flex. For this purpose, the accoucheur introduces the left hand into the uterus, if the occiput be on the right, and vice versâ; then the fingers are crooked, and an attempt is made to hook the occiput, and bring it to the superior strait.

The difficulties of this manœuvre are readily seen; in fact, the contraction of the uterus, in most cases, will oppose the introduction of the hand; and, farther, it is difficult for the fingers to get sufficient hold on the occiput, and the cause which determines the presentation acts constantly to reproduce it in spite of the efforts of the accoucheur.

The dangers are the same as those stated when speaking of the manœuvre for the parietal varieties (discharge of the amniotic fluid, descent of the cord, and of one or both arms). Thus this manœuvre is seldom employed, and hence the forceps should be used when the pains are weak.

B. *Forceps*.—This instrument should be applied from one occipital protuberance to the opposite frontal prominence. The head cannot be flexed by this instrument, but it may be brought down; but in this case, the descent will be more difficult than in the parietal variety, on account of the disproportion between the head and the pelvis. (See *Deformities of the Pelvis, and Application of the Forceps*.)

(Fig. 115.)



Occipital Variety.

The defect in the descent of the head which presents itself in the occipital variety, can only be explained by an abnormal flexion of the head, which places the posterior part of the neck of the child in relation with the superior strait, and then this would be no longer an occipital variety. Farther, this presentation, if it were possible in the fœtus at term, would terminate sooner or later by descending into the superior strait, in consequence of the spontaneous depression of the occiput. What is to be done when this anomaly is seen at the superior strait? First, the uterus must be righted if it be inclined, and then we must examine attentively if the defect in the descent do not depend on some cause other than the presentation; and when we are satisfied that everything contributes to favour the descent, and that it cannot take place, we should attempt to correct the presentation. For this, a manœuvre has been recommended which is the inverse of that described to bring the

occiput into the frontal variety: it consists in acting on the forehead with the right hand, if the forehead be to the left and reciprocally, and depress the forehead, to bring the vertex to the centre of the superior strait. This operation is, perhaps, still more difficult than the preceding; it is attended with the same pain and the same danger: hence pelvic turning is preferable.

REMARKS ON ALL THE VARIETIES OF PRESENTATION OF THE VERTEX.

To conclude, all the varieties of presentation of the vertex should permit, sooner or later, the descent of the head, either by correcting the position, or by descending in an inclined direction; when this is not the case, it must generally be ascribed to some foreign cause, as the inclination of the uterus, the feebleness of the pains, and particularly a marked disproportion between the size of the head and the dimensions of the superior strait.

The irregularity of the pains, when it exists with these varieties, may lead to the belief that the slowness of the descent depends on the presentation. In fact, a person unaccustomed to these things would be astonished to see the head remain at the superior strait, notwithstanding the continued energy and constancy of the contractions, and would naturally think it correct to attribute the delay to the presentation, which seems abnormal, when, in fact, there is neither inclination of the uterus nor contraction of the pelvis.

These irregular contractions, however, move the fœtus to the right and left, but do not cause its descent, although the pains are severe and constant. I am even satisfied that if disadvantages have been attributed to the occipital variety, it is because difficulties dependant on the circumstance we have mentioned, and which have been ascribed to other presentations, as we have seen, are entirely disconnected with it. Hence, in these cases, the accoucheur should ascertain the type of the contractions, to regulate them as required. (See *Morbid Contractions*.)

ART. V.—SEPARATE MULTIPLE FŒTUSES.

In case there is a plurality of fœtuses, the labour is generally more rapid than where there is only one. In fact, twins are usually born before term, and are then expelled more rapidly on account of their small size. Farther, the fœtuses are generally delivered without delay, one after another.

Sometimes the uterus, after expelling the first fœtus, contracts, and ceases to act; labour is suspended for a time, which is seldom more than half an hour, the pains return, and the second child is expelled: the same would be the case in a third and fourth fœtus, if they existed in the uterus.

This, however, does not always take place, and the expulsion of the other fœtuses may be deferred for hours, or even days. Should the accoucheur wait for the spontaneous birth of these, or should he interfere?

In my opinion, in these cases, the accoucheur should not remain inactive. Thus, when the mother has not been fatigued by the first labour, if the presentation of the fœtuses be natural at the superior strait, he should rupture the amniotic bag, rub the uterus to excite its contractions, and hasten the delivery of the other fœtuses, which will be accomplished more readily, because the genital organs have been dilated very recently by the first child.

When the delivery of the first child has been long and difficult or has required the interference of art, and the mother is weak and exhausted, the labour should be terminated, taking care, however, not to empty the uterus too rapidly, in order that this organ, which has been considerably distended during pregnancy, may not become inert.

All those conditions which may endanger the life of the mother or children need the interposition of art in this as well as in other cases. We must, however, define the indications required by certain symptoms peculiar to a plurality of fœtuses.

Thus, two fœtuses may present themselves simultaneously at the superior strait by the head, and mutually impede the delivery: this case is very rare, and it may be remedied by raising the most movable head, and permitting the descent of the other. One head may present at the superior strait, accompanied by the feet; if nature do not overcome this obstacle, which is hardly supposable, and we are obliged to use some slight force on the lower extremities, care must be taken to pull only on one foot, lest the two feet do not belong to the same child. The same thing should be observed when turning is performed in a case of twins.

Without this wise precaution, we should be in danger of bringing down simultaneously parts which cannot be extracted together.

In this case, also, the head of the second child may descend with the trunk of the first, of which the pelvic extremity has presented, the head being situated at the superior strait. Thus, the head of the first child brings down the head of the second; as a cord draws a cork from a bottle (if I may be allowed the simile). If the fœtuses be very small, they may be extracted or expelled in this manner; but if they be of ordinary size, inasmuch as the two cannot descend together, art must interfere. In this case, we must be careful not to pull upon the feet of the first one, but on the head of the second, if the head cannot be pushed back. In fact, the first fœtus, the feet of which have descended, represents a cone, the apex of which has come down before the base; as the parts descend they increase in size, and become more difficult to extract. The second child, on the contrary, represents a cone where the base has descended before the apex, and then, as the parts to be extracted become smaller, they will yield to tractions more readily. Hence, the forceps should be applied to the head of the second child: in case these means fail, the head may be opened, and its delivery thus facilitated.

ART. VI.—MONSTROSITIES.

I shall not speak here of acephalous, anencephalous fœtuses, &c., as their delivery is as easy as that of a well-formed child.

§ 1. *Plurality of Adherent Fœtuses.*

Although it may be possible to ascertain the existence of twin pregnancy, we cannot determine whether the fœtuses are attached until after the membranes are ruptured. But, after the rupture of the first bag, if a second break directly before the descent of the first fœtus, we must infer that the children are separate, especially if the head and feet be felt at the same time at the orifice. In fact, if the twins be separate, each fœtus generally has its distinct ovum, and then two ruptures occur; and, farther, the feet and the head of one, or the feet of one and the head of another, may descend simultaneously when the fœtuses are distinct; but when they are united, they are contained in one ovum; there is then only one rupture of the bag; and as they never adhere by the head, if several parts present at the superior strait, it must be the heads or lower extremities.

Now, if two heads and two pelvic extremities present simultaneously, which might readily occur in cases of separate fœtuses, the introduction of the hand into the uterus can alone discover the facts of the case.

But where we suspect the fœtuses are united, we must not begin by introducing the hand into the uterus, but must wait until nature fails, as these products are frequently born spontaneously. The mode of expulsion and the operative processes vary according to the kind of monstrosity.

A. *Fœtuses united by the Head or Breech.*—When the point of union is flexible, the two children may adapt themselves one to the other, and thus be expelled readily. In the opposite case, especially if the fœtuses be at term, art must interfere. The accoucheur must pull one part and push back the other, and thus produce an overlapping: if this manœuvre fail, he must attempt to remove all these parts simultaneously with the hands or forceps. Finally, if these fail, the fœtus may be mutilated without hesitation. It is unnecessary to state that in this case no operation should be performed on the mother to remove a monstrosity, as this practice ought not to be pursued even for a well-formed fœtus.

B. *Two Heads and one Trunk.*—If the two heads be sufficiently movable to descend successively, the labour may terminate spontaneously; but if the two heads descend simultaneously, we should proceed as in the previous case.

C. *One Head and two Trunks.*—The size of the head alone may impede delivery.

D. *Each Head with a separate Trunk, the Trunks united.*—The overlapping of one part on the other will alone permit the expulsion. In case this do not occur, we should act as before in A.

ART. VII.—OBSTACLES PRESENTED BY THE SOFT PARTS.

§ 1. *Union of the External and Internal Labia.*

If this union be congenital, it must be imperfect, as otherwise conception could not occur; and if it be perfect, it could not take place till after impregnation, and then as the result of accident.

In most of these cases, nature triumphs over the obstacles. If, however, this adhesion of the labia impede the termination of labour, they must be separated by the bistoury.

§ 2. *Continuance of the Hymen.*

The hymen seldom obstructs labour; when it does, it should be divided.

§ 3. *Narrowness and Rigidity of the Vulva, Resistance of the Perineum.*

The resistance of the external organs is generally overcome by labour-pains; sometimes, however, art is compelled to interfere, lest nature, by removing these obstacles, should cause more or less serious trouble. In fact, if the perineum be less resistant than the vulva, it may be torn, and give passage to the child. Moreau has cited several instances of these central perforations of the perineum; the vulva, perineum, and even the anus, may be more or less injured.

Finally, the parts may resist so firmly as to prevent the expulsion of the fœtus, and then art interferes.

It will readily be seen that the forceps must not be used in these cases, except when the parts are not too resistant or rigid. In most instances, in fact, notwithstanding the utmost precautions, its use causes accidents which it is desirable to avoid, such as laceration of the perineum and anus. In these cases, we must follow the example of Dubois, and make, on one of the lower sides of the distended vulva, an oblique incision of one or two lines in extent: this will be sufficient to permit the spontaneous expulsion of the fœtus, and in case it enlarges and extends, it never affects the parts it is so important to preserve, the anus and rectum; for this prolongation will in fact occur obliquely, while a laceration on the median line* may, by its extension, involve the sphincter ani muscle.

In this manner, then, delivery will occur, and the evil consequences of the forced expulsion of the fœtus will be avoided.

This incision is also preferable to lacerations, because it heals rapidly, and the union is perfect (while this is not the case with lacerations of the perineum). This arises from the fact that the lateral incision is not moistened constantly with the fluids from the genital organs.

* This was the case with Madame Leroi, in her first labour, and Dubois was obliged to perform this operation. This female, in whom, beside extreme narrowness of the external organs, there was a contraction of the superior strait, was delivered, December 7th, of a living child, weighing seven pounds. She left the hospital, well, December 21.

If the resistance be slight, and the arrest of labour depend on the fact that the contractions are not powerful enough to overcome the resistance of the soft parts, the forceps must be used without making an incision, but very slowly and carefully.

Finally, if, in case of very evident narrowness of the parts, or too great resistance of the perineum, the pains cease, after employing means to bring them on, the forceps must be used, but then a lateral incision should be made in the vulva.

It is very difficult to determine exactly the precise moment for action, where there is excessive resistance in the perineum and soft parts. In fact, the indications are regulated by the strength of the patient, the time that has elapsed since the descent of the head, the intensity of the uterine pains, &c.

Generally, however, we must act after a labour has continued from thirty to thirty-six hours, and the head, having come into the cavity of the pelvis, has remained four or five hours on the perineum without overcoming its resistance. This is the only mode of preventing the various accidents which depend on the prolonged continuance of the head in the cavity, viz., compression of the maternal organs, gangrene of these parts, vesico or recto-vaginal fistulæ; the death of the fœtus in consequence of derangement in the utero-fœtal circulation by pressure, exhaustion of the mother, uterine inertia after the birth of the fœtus, and consequent hemorrhage, &c.

But although timely aid is indispensable, we must not follow the example of those who constantly interfere, and use too lightly and quickly remedies which are apt to be attended with inconvenience.

The sagacity of the accoucheur, however, will note all the circumstances which may affect his course.

I insist on this point, because I have very frequently been called by young practitioners and inexperienced midwives to use the forceps in cases where it was thought necessary to terminate the labour, and this a few hours after it had really commenced; while it was only necessary to wait quietly for the delivery, which was effected spontaneously shortly after my arrival, and without any action on my part.

Another circumstance which often presents, and which frequently leads young accoucheurs to anticipate a long-continued labour and the necessity of interference, is the premature descent of the head before the dilatation of the neck of the uterus, and, consequently, before labour; the accoucheur finds the head on the perineum, and refers the commencement of labour to this period; he relies on this fact alone; all other circumstances, such as the character of the pains, the dilatation of the neck, are unnoticed, and he thinks himself obliged to terminate a labour which he imagined was commenced longer than was really the case.

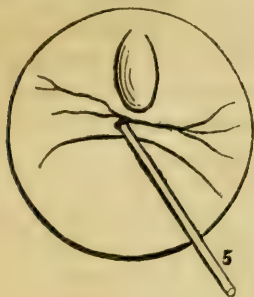
Narrowness of the Vagina.

Nature alone is generally sufficient in this case; the head is the

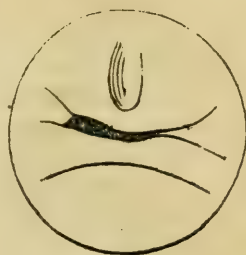
best dilating body imaginable; it acts gradually and slowly, proceeding from the upper part of the vagina, which is the broadest portion of this canal. When the pains are not strong enough to force down the head, they should be made more active; finally, if necessary, the forceps should be used.

Adhesion of the Parietes of the Vagina and Transverse Bands.

(Fig. 116.)



(Fig. 117.)



As we have stated in the article on *Pregnancy*, these defects in formation generally present no indication during pregnancy, nor at the time of labour. I have mentioned the case of the young female who was delivered spontaneously at La Clinique, although in her the vagina was divided transversely by a firm membrane, presenting a small orifice, and, before labour, when seen by the speculum, presented the form as delineated in fig. 116, and after labour appeared as in fig. 117. But things do not always terminate so fortunately. The adhesions of the parietes of the vagina, the bands and congenital membranes, which might not impede conception, may obstruct parturition. In this case, having experienced the inefficiency of uterine contractions, the accoucheur should remove the obstacle.

A. Treatment.—The bands and membranes should be divided crucially. If they be near the vulva, after emptying the bladder and rectum, the labia should be separated in order to make the section. If they be situated deeply, the speculum will be indispensable. In all cases, we must act very slowly, and divide the tissues layer after layer. We must be still more careful if the obstacle be caused by the adhesion of the parietes of the vagina. In fact, in these cases, the bistoury often acts blindly. It is very difficult to determine exactly if one of these two layers be not more divided than the other. Thus, when the tissues are once cut, we should attempt to destroy the adhesions by a blunt medium, the finger, for instance, and avoid as much as possible the bladder and rectum. These operations are, as may well be imagined, extremely difficult and dangerous; very happily, nature generally relieves the accoucheur from the trouble of performing them.

ART. VIII.—TREATMENT IN DEFORMITIES OF THE PELVIS AND EXCESSIVE SIZE OF THE FŒTUS.

When the pelvis is contracted by the approximation of its pari-

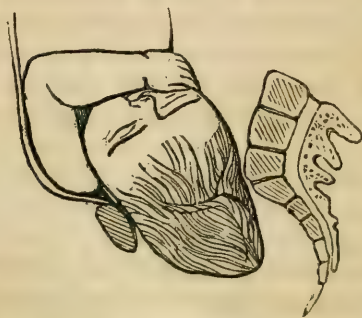
etes, or by the development of firm tumours attached to the osseous tissue, the treatment will vary with the degree of the deformity, the force of the pains, the abnormal size of the foetus, the reducibility of the head; but, unfortunately, we cannot point out very exactly the course to be pursued by the accoucheur, as the volume of the child cannot be estimated before birth with any degree of precision; in fact, it is in hydrocephalus only that we can judge of the size of the head by the separation of the sutures, and even in this case it will be difficult to decide, *à priori*, upon the kind of operation.

However, we shall first suppose that the deformity can be detected, and that the size of the head is normal, and shall point out the course to be pursued in each of the degrees of contraction, on which I have already established indications to be fulfilled during pregnancy.

§ 1. *Treatment when the smallest Diameter of the Pelvis measures at least three Inches and a half.*

When the vertex presents in a pelvis which measures, in its smallest diameter, at least three inches and a half, we must wait and intrust the delivery to the efforts of nature, which will probably be sufficient; thus, after the rupture of the membranes and perfect dilatation, we may remain inactive six or seven, or even eight hours, according to the strength of the patient; the head is pushed on by the pains, its extremity descends, the bones lap over each other, the occiput elongates, a considerable sero-sanguineous tu-

(Fig. 118.)



mour forms on it; and, finally, the base of the scull, measuring three inches, passes through the superior strait. But if constant and powerful contractions, during this period, cannot overcome the obstacle, if the head make no progress, the forceps must be applied. So, too, if the head remain a long time in the cavity, being retained at the inferior strait, which may be badly formed, or, if well formed, if the shoulders cannot overcome the obstacle at the superior strait, through which the head has passed, we must act more promptly.

§ 2. *Treatment when the Pelvis is at most three Inches and a half and at least two Inches and a half.*

We shall first consider the indications required by this degree of contraction, the child being alive, and shall admit, with M. Du-Bois, two subdivisions.

From three and a half to three Inches.

We must wait, as in the preceding case, six, seven, or eight hours, during which the pains may be strong; for there are numerous cases of spontaneous delivery in this degree of contraction; but after this time, if the pains be insufficient, the forceps should be used.* If tractions made properly be not sufficient, the instrument should be withdrawn, and the case left to the powers of nature for one or two hours, and then the forceps should be again applied; if the second application be unsuccessful, and delivery with them is found to be impossible, the head should be opened, even if the fœtus be living. In fact, having done everything possible to save the child, we must now attend to the mother. Parturition cannot take place, unless the pelvis is enlarged or the size of the fœtus diminished. One cannot hesitate; and although it is painful to sacrifice a living child, yet, if we follow the advice of some French writers, and delay until the child dies, we do not destroy life, it is true, but permit the child to die, which, I think, is the same thing. But to wait for the death of the child may cause a long delay, and during this time the female is exposed to the pains and suffering of an unavailing labour, and her life may be endangered, if not immediately, at least by the consequences of too prolonged parturition; hence, she ought not to be exposed to so many dangers in order to preserve the life of a child whose viability is already compromised, and whose death is constantly looked for.

In fact, the course of the English physicians seems to me more judicious: when the delivery is thought to be impracticable, when all the means compatible with the safety of the mother and child have been tried in vain, they do not hesitate to operate on the child in season, and, through an unintelligible degree of sensibility, they do not sacrifice the mother by culpable delay. Under these circumstances, however, it is always well to have the advice of several medical men.

Pelvis measuring three to two Inches and a half.

If the child be living, we should delay; for if the pelvis measure a few lines less than three inches, children may be born alive, under the following circumstances: strong pains, extreme reducibility of the head, smallness of the fœtus, which may be not fully grown: the forceps also should be used, as in the preceding case, before we follow the English practice; but even when the forceps can be applied, which is not always the case, the instrument is not safe for the fœtus, and it may endanger more or

* The dwarf Lepratt, twenty-one years old, well known at our minor theatres, having gone her full time, could not be delivered by her four physicians. The pelvis measured about three inches. M. Dubois delivered her with forceps while in a comatose state, preceded by convulsions. The child was dead.

This female recovered perfectly under my charge, and was seen shortly after by M. Montgomery in Paris.

Being again pregnant, Dubois was called in early, and she was delivered prematurely of a little girl, who was suckled for a short time by the mother. This case has been published by Dubois. (*Bulletin de l'Académie Royale de Médecine*, Paris, 1840, vol. v., p. 35, &c.

less the soft parts situated around the edge of the superior strait. Hence, we ought not to insist too much on the instrument, and after using some force, and for some time unsuccessfully, the forceps should be withdrawn and the head perforated.

Now in these two cases, the pelvis measuring from three to two inches and a half, if the child be dead, we should act immediately, in order to spare the mother all the dangers of a painful and long labour. In this degree of contraction, also, symphyseotomy has been recommended, but, thanks to artificial premature delivery and the invention of the cephalotribe, this operation has fallen into disuse. While symphyseotomy is nearly as severe for the mother as the Cæsarean section, it is by no means so advantageous to the child, which generally dies. Farther, when the pelvis measures less than two inches and a half, this operation is impracticable. In fact, if the symphysis be separated to the utmost, say two inches, the antero-posterior diameter is only increased four lines, and allowing three lines for the descent of the parietal protuberance in this separation, we have seven lines as the total increase.

Now suppose the pelvis measures only two inches and a quarter, this would afford a passage of two inches and three quarters at the maximum: hence there could be no spontaneous delivery, and the forceps would be always necessary, and sometimes even the perforation of the cranium.

§ 3. *Pelvis measuring less than two Inches and a half.*

In this case, the spontaneous or artificial delivery of the fœtus is physically impossible; we have then to choose between the mutilation of the fœtus and the Cæsarean operation. I never hesitate: whether the fœtus be living or dead, it seems rational to act on it, whenever by so doing we can give the mother any chance of recovery. Thus, I put aside entirely the question of the life or death of the child.

In this case, also, the indications vary according to the degree of contraction.

The smallest Diameter of the Pelvis from two to two Inches and a half.

In this degree of contraction we can diminish the size of the fœtus and remove it by the cephalotribe forceps of Baudelocque, Jr., without exposing the mother to very imminent danger; but we must carefully avoid the sharp crotchets which are found in most forceps; they are murderous instruments, which the accoucheur cannot guide safely, and which do not find a firm hold on those parts of the fœtus to which we attempt to apply them. They slip as soon as any force is employed, and lacerate, to a greater or less extent, the parts of the unfortunate mother, who often dies from the injuries of this distressing operation, even before it is terminated.

The cephalotribe, on the contrary, is a very valuable instrument, although it is condemned by those who have used it unsuccessfully,

and those who had no part in its invention. But still it is appreciated by all men of enlightened minds as an extremely important instrument, which has already, and will render, immense service in obstetrics. I have frequently seen it used by Dubois, in cases where, formerly, the mother would certainly have been much lacerated by removing the child piecemeal, and where even the Cæsarean section would have been thought necessary. I believe in the wisdom of Velpeau's remark: "When it shall be proved," says he, "that the cephalotribe has done more injury than good to society, I shall still consider it as the most important discovery in the art of obstetrics."

This instrument has doubtless serious inconveniences: it is difficult to direct it well. The points which perforate the hairy scalp may lacerate the organs of the mother; but who will dare say, *that, even in skilful hands, the cephalotribe is a murderous instrument, which ought to bring disgrace on its inventor, and that it is as dangerous as the Cæsarean section, if not more so?* We admit that, in unskilful hands, the cephalotribe may be as fatal as the Cæsarean section: in two cases, where it was used by the same accoucheur since its invention, autopsy has shown that a part of the uterus was grasped at the same time as the head of the child; but this is not the rule; it is only the exception. From such failures, it is easily seen why some men, whose opinions have weight with those pupils who cannot judge for themselves, exclaim so loudly against the cephalotribe, and totally condemn an instrument to which they ascribe accidents arising from their own want of skill.

In short, if many cases of failure have contributed to bring the instrument into disrepute, it is because it has often been directed by unskilful hands, or because it is seldom used until the life of the mother has been endangered by the length of the labour, or by the various manœuvres performed.

In a word, females have been brought to La Clinique when at the point of death; and we cannot expect that the use of this instrument, even in the hands of a person as skilful as Dubois, will be as successful as if the operation had been performed in season.*

In conclusion, notwithstanding the danger of this instrument to

* A female, whose pelvis measured only two inches and a half, and who had been in labour for five days, was brought to La Clinique in a dying state. Dubois performed cephalotripsy, and removed the trunk with great difficulty.

Another female, who had been three days in labour, was brought to La Clinique, also dying. The superior strait, which was evidently narrowed, was occupied by the face, left arm and one foot. These parts had been brought to the superior strait by ineffectual attempts to turn. Dubois perforated the forehead, and used the cephalotribe. The fœtus had been dead for some time, and was very large.

In another case, Dubois was called to the Hôtel Dieu, to a female who had been twenty-four hours in labour, and from whom neither the head of the child, nor the instrument which had remained in the sexual organs, could be removed. Dubois found the patient in this state; he began by removing the forceps, and then diminished the head by the cephalotribe; but the child was softened and putrefied, the head came off, and it was then necessary to apply the cephalotribe on the chest.

These three females, selected from many others, died almost immediately after their delivery; but their death could in no wise be attributed to the cephalotribe, directed by so skilful an operator as Dubois, but to the length of the labour, and the constant efforts made before applying to a more expert accoucheur.

the mother, it will give her more chances of recovery than the Cæsarean section.

Thus, whenever the cephalotribe can be introduced at the superior strait, it should always be preferred to the Cæsarean section, which has failed in Paris, and but seldom succeeded in other countries.

M. Dubois performed it twice, while I was at La Clinique, with success to the child, but the mother sunk. The last, however, survived seventeen days, and died with tetanus, when entire success was expected from the state of the wound and the general condition of the patient. This operation was performed a third time, in the absence of Dubois, by M. Moreau; the child died at its birth, and the mother sunk in a few hours after the operation.

The Pelvis less than two Inches.

In this case, we cannot think of extracting the fœtus through the natural passages; for, supposing even that the instrument could be introduced, it would then not always be possible to remove the child, and this removal would require immense efforts, which lacerate and bruise the organs of the mother, and expose her to nearly the same danger as the Cæsarean section.

In this event, one of the two individuals would be sacrificed, and the other would have a very slight chance for life, while the Cæsarean operation saves the life of the child, and leaves the mother nearly as many chances of safety as cephalotripsy.

§ 4. *Uncertainty as to the Degree of Narrowness and the Size of the Head.*

There are cases where neither the finger nor the pelvimeter can ascertain the degree of deformity in the pelvis, and which, however, have required the mutilation of the fœtus. It is very difficult, if not impossible, for this to occur when the pelvis is less than three inches, as, from the facility with which the finger can reach the sacro-vertebral prominence, the extent of the superior strait can be very closely estimated, and the course to be pursued is readily seen. When the pelvis measures more than three inches, the exact degree of the narrowness is not easily estimated; and, farther, in consequence of our inability to ascertain the size of the head unless hydrocephalus exist, we might often at first be mistaken as to the means to be employed.

In these cases, the accoucheur should begin by the most innocent means, and not employ those which are more energetic until the former have been found to fail. Suppose, for instance, that an accoucheur is called to a female in whom the pelvis measures three inches and a half, and that there is no ground for suspecting that it is contracted: the female may have been confined once or twice easily, which might readily occur with this degree of contraction, because the heads of the first children were small, and the pains strong.*

* A female in the Rue Vieille-du-Temple, who sent for me, was a case of this kind. She

But in the third pregnancy the child is large, and the head ossified: after seven, eight, or even ten hours of fruitless effort, the accoucheur determines to aid nature; at first he employs the forceps, and, after successive unavailing attempts, he is obliged to have recourse to the perforator; should this fail, he resorts to cephalotripsy.

It must be admitted that these cases are not rare in practice; and the conduct of the accoucheur must be regulated by the difficulties he meets with after the successive use of each remedy.

ART. IX.—TUMOURS IN THE PELVIC CAVITY.

Tumours, varying in nature and form, may diminish the capacity of the pelvic excavation, and occasion a serious obstacle to delivery, which often compromises the safety of the mother.

"There are," observes M. P. Dubois, "in these cases, numerous complications, which it is not possible to foresee, which exceed all our conjectures, and leave us often without a remedy." These tumours may be developed in the osseous tissue itself, and be attached to the parietes of the excavation: such as exostoses, periostoses, carcinomatous and fibrous tumours. Others are contained in the substance of the vaginal walls, and more particularly in the recto-vaginal septum, and are more or less movable. They are of a cancerous or fibrous nature; and sometimes are in the form of cysts of various composition, containing either fluids, encephaloid or fleshy masses, or, finally, extra-uterine fetuses.*

§ 1. *Attached Tumours.*

Periostoses, exostoses, and other solid and adhering tumours, deform the pelvis, and present as serious complications as when this cavity is contracted.

Indications.—The conduct of the accoucheur, therefore, will be

was small, the pelvis manifestly narrowed, but with regularity. The antero-posterior diameter was not more than three and a half inches. In her first labour, she was delivered by introducing the forceps, and withdrawing them several times, and this continued from 5 P.M. till midnight. The child was dead; the mother was dangerously ill, but finally recovered.

In the next two pregnancies, she was delivered, after a long and tedious labour, of living children, which were small, and had very compressible heads. Finally, in 1842, eighteen years after the third labour, she became pregnant, but things were not so favourable as in the last labour. After going her full term, and perhaps a little over it, she sent for me, and after a labour of twenty-four hours, and twelve hours of severe pain, as the head did not advance an inch, I applied the forceps above the superior strait, and was aided by M. Brazier. The head was in the left anterior occipito-iliac position. The blades were readily applied, and they were locked with some difficulty. The head being held firmly, powerful traction was made, which brought it into the strait; but feeling that the instrument had slipped, I withdrew it, and applied it again. The head was now brought down, the perineum was supported by M. Brazier, and was uninjured; the child, however, breathed a few times and expired. The operation did not continue more than twenty minutes. The death of the child might have been hastened by the forceps, and also by the cord, which slipped below the head after the first application of the instrument.

The mother recovered perfectly, and more rapidly than after the two spontaneous labours. She is now well. The difficulties in the fourth labour depended upon the narrowness of the superior strait, and the enormous head of the child and its firmness, it being so ossified that the sutures and fontanelles were barely perceptible.

* Larrey, Jr., communicated a case of this character to the Medical Society of Emulation. From a patient in La Clinique he removed a vesical calculus as large as a pigeon's egg, and also a similar tumour situated on the bladder. The extirpation was performed through a fistulous opening which had existed for many months in the hypogastric region, and from which projected a tuft of hair like that of the head. This operation succeeded perfectly.

precisely the same. When the volume of the tumour, however, renders it necessary to have recourse to an operation, which may be more or less serious for the mother and child, we should, after having ascertained the nature of the tumour through the vagina and rectum, puncture it, and thus diminish its size, by affording an escape to the fluid it contains.

These tumours are sometimes partly solid and partly fluid ; and this puncture will frequently suffice to allow the delivery to proceed.

It must be remembered that great caution is called for in this operation, and that it should not be resorted to until the nature and seat of the tumour are perfectly understood, in order that no risk may be incurred of injuring any important organ.

§ 2. *Movable Tumours.*

The movable tumours met with in the pelvic cavity are not developed there ; they are composed, for the most part, of ovarian cysts, and pediculated tumours of various kinds, originating in the abdomen ; of vesical calculi, and of the bladder itself distended by urine, and which are pushed into the cavity below the fœtus, thus affording an obstacle to its passage. When these tumours are small, parturition may be accomplished, but the friction of the tumour, and its contusion, frequently give rise to serious consecutive trouble. In all cases, we should endeavour to place the abdominal tumours above the superior strait.

Indications.—When the accoucheur ascertains, at the commencement of labour, the presence of one of these growths at the superior strait, he should support it constantly with the extremity of his fingers, especially during a pain, in order that the head may descend while the tumour is kept in its place. If by these means the head do not descend, he should then introduce his hand into the vagina, and raise the tumour above the superior strait ; then, if the membranes should be entire, he must rupture them immediately, in order to facilitate the descent of the head. If, on the arrival of the accoucheur, the tumour have already passed into the cavity, he should still attempt its reduction during the interval of contraction ; but should the head have descended into the superior strait, and become firmly fixed by the uterine contractions, the reduction will be impossible. Under these circumstances, the accoucheur, after being well assured of the insufficiency of nature, is left no other alternative than to extirpate the tumour or reduce the size of the head. The nature of the tumour will decide him as to the course to be pursued.

*A. Abdominal Tumours.**—If the tumour have descended into the

* On the 2d of June, 1837, I was requested to visit Mrs. B., aged twenty-seven years, from whom I heard the following particulars : She had been married nine months and a half. Previous to her marriage she had always enjoyed good health, and her "monthly courses" had observed a marked regularity. About six weeks prior to marriage, she thought she observed a very slight swelling in the iliac region ; it produced no uneasiness, but actuated, no doubt, by a proper feeling of delicacy, Mrs. B. consulted a physician, to know whether, under the circumstances, it would be proper for her to marry. She was assured that the swelling would amount to nothing, and, therefore, felt no farther anxiety in regard to it. Her

posterior cul-de-sac of the peritoneum, there will be every reason to believe that it consists of an ovarian cyst, or of some other organ,

"courses" never returned after marriage, and the various presumptive and probable symptoms of pregnancy soon manifested themselves. With the exception of frequent indisposition to sleep at night, and torpid bowels, nothing remarkable occurred until about eight and a half months after her marriage. At this period, the pain in her back was at times excessively severe, and the abdominal enlargement had increased so rapidly, that she found it necessary to seek medical advice. A surgeon was accordingly sent for, and, after reflecting on her case for some days, told the husband of Mrs. B. that, if his wife would consent, he would remove the tumour. To this proposition she, in common with her husband and friends, objected. Another medical gentleman was then requested to meet the first in consultation. Nothing, so far as I could learn, of professional interest was agreed on by them. The husband, naturally anxious to know the precise condition of his wife, called on these gentlemen, and requested them to say whether they considered her pregnant. They declined giving an opinion, and said they would prefer waiting, as a few days would decide the nature of the case. Dissatisfied at not receiving more encouragement than was imbibed in the above conversation, the gentlemen were told that their services were no longer required.

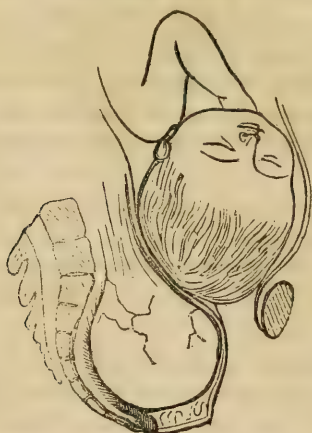
This is the purport of what transpired previous to my seeing the case, and the facts are stated as taken down by me at the time from the lips of Mrs. B., in the presence of Dr. Washington. On visiting the patient, I found her excessively enlarged, and labouring under very acute distress; the integuments on the abdomen appeared ready to burst; she was feverish, and much troubled with constipation; her respiratory and digestive organs suffered greatly from pressure, and her general appearance of emaciation evidenced much internal trouble.

For the last two weeks Mrs. B. had been compelled, such was her distress, to leave her bed frequently during the night and walk the room. After a very rigid investigation, by way of question and answer, as to the history of the case, I was unable to elicit any facts other than those which have already been mentioned. Mrs. B. being then arranged in bed on her back, with the thighs flexed on the pelvis, I made an abdominal examination of the tumour. It was very evident that the enlargement was wanting in uniformity, and it assumed somewhat a diagonal position as regarded the abdomen. There was no pain when the tumour was pressed upon; and, in percussing the abdomen, a very distinct fluctuation was perceptible. It was plain that this was not a case of ascites, for the fluctuation, though tolerably diffused from the great size of the tumour, was certainly circumscribed; and ascites, we know, at least in a majority of cases, is preceded by such symptoms of disease as will at once enable the careful practitioner to detect the malady. From the previous history, therefore, of the case, together with the symptoms present, I had no hesitation in concluding that the patient laboured under ovarian dropsy. An examination, per vaginam, was next made, and it was discovered that the womb was enlarged. There was nothing remarkable about the cervix uteri—no pain on pressure, and its structure appeared perfectly natural, nor was there the slightest vaginal discharge. The finger being introduced into the rectum, the posterior surface of the womb evinced a decided development of this viscus, and this latter examination fortified me in opinion as to the probable amount of uterine enlargement. The question now to be decided was an exceedingly important one. Did the enlargement of the womb depend upon pregnancy, or was it the result of disease, or might it be owing to the presence of something in its cavity other than a fœtus? That it was not disease, the perfect absence of pain, and of all the symptoms ordinarily attending a morbid condition of this viscus, seemed clearly to demonstrate. The patient was fully under the impression that she was pregnant, and had, together with her female friends, attributed all her distress to this condition. She, however, had never felt the motion of the fœtus. It will thus be seen that I had arrived at a portion only of my diagnosis, and the duty devolved on me to endeavour to account for the enlargement of the womb. Accordingly, I resorted, as the only means now left, to auscultation. I made repeated attempts, simply with my ear applied to the abdomen, to detect the pulsations of the fœtal heart, or the "bruit placentaire." I did not succeed. On the following day, I requested my friend, Dr. Washington, to visit the patient with me. She was again examined with great care, and repeated attempts were made, both with the ear and stethoscope, but without success. Under all the circumstances of the case, we felt ourselves justified in giving the following opinion, which was stated to the patient and her friends, viz., that Mrs. B. laboured under ovarian dropsy, complicated, most probably, with early pregnancy. The distension of the abdomen was now so great, and the distress from injurious pressure so marked, that it became my duty to urge on Mrs. B., as a means of temporary relief, the necessity of being tapped. The suggestion was not assented to, and palliatives were directed—keeping the bowels in a relaxed state, and ordering such articles of diet as were most easy of digestion. Morphine procured her comparative rest at night. She continued in this state until 15th July, when I operated on her in the presence of Dr. Washington, Professor Alban Goldsmith, Drs. Caldwell and Hibbard. One gallon and a half of amber-coloured fluid, of the consistence of melted calf's foot jelly, were drawn off. She experienced such immediate relief as to elicit the expression that "she felt as if she were in heaven." On the following day Dr. Washington and myself again had recourse to the stethoscope,

the removal of which might determine the immediate death of the mother: in this case, he will be obliged to act on the foetus; and it is here that the perforator, and especially the cephalotribe, will be of essential service.

The following is a case in point: A female named Bernet, while in labour, 27th February, 1839, at 5 o'clock P.M. was brought to La Clinique; the membranes had been ruptured since the 20th, and

(Fig. 119.)



and the pulsations of the foetal heart were distinctly heard. This was most gratifying, so far as it confirmed the diagnosis. It is highly probable that the great size of the tumour had materially interfered with our arriving at this result earlier. On the 20th of July Mrs. B. quickened. From the period of the operation until the following October, Mrs. B. enjoyed comparatively excellent health; her digestion was much improved, and she gained flesh. In October, however, it again became necessary to draw off the accumulated fluid. One gallon was taken away; in two days afterward the distension was much increased, and on the 19th of October half a gallon of fluid was drawn off. It is worthy of remark, that, in performing this last operation, not more than an ounce of fluid passed through the canula. A probe was introduced to remove the obstruction, but none was found to exist. It was, however, very evident that there was yet a great quantity of fluid in the ovarium, and the distress of the patient obviously indicated the removal of at least a portion of it. The trocar was therefore introduced into another part of the tumour, when not more than two ounces passed away. The instrument was then withdrawn, and, on looking attentively at the ovarium, a pouting was observed at its upper portion, immediately under the last rib. The trocar being introduced at this point, sufficient fluid escaped to make the patient quite comfortable. The cause of the difficulty was owing to the fluid being enclosed in cysts, each distinct in itself; and it seems to me that a useful lesson can be derived from the recollection of this fact. For example, in hydatid dropsy of the ovarium, post-mortem examinations reveal to us that the various cysts, or compartments, vary in size, some containing a gallon or more, while others are so small as not to yield, when punctured, an ounce of fluid. Now, let us suppose our opinion to be formed as to the existence of ovarian dropsy in any given case, and, in the event of an operation, if, in puncturing one of the small cysts, not more than a large spoonful of liquid escaped, we might at first suppose that we had failed in our diagnosis. The bare mention of the fact will, I apprehend, be sufficient to put practitioners on their guard against the possibility of such an error, in volving, as it certainly would, their professional reputation, if, indeed, it did not compromise the safety of the patient.

After the last tapping, Mrs. B. passed on with more or less distress to the period of her confinement, which took place on the 29th of October. She was in labour only two hours, and was delivered of a still-born, unnatural, and sickly-looking infant. The placenta followed almost immediately the expulsion of the foetus, and the uterus was well contracted. In two hours after the birth of the child, the ovarium commenced enlarging, and in thirty-six hours after delivery this poor woman breathed her last, the abdomen being almost ready to burst, from the gaseous distension of the intestines. The husband and friends had been fully admonished of the almost certain result of the case soon after we had first visited the patient. In the post-mortem examination, in which I was kindly assisted by Dr. Caldwell, the uterus was found to be perfectly healthy, the left ovarium was immensely large, and filled with a number of hydatid cysts. The right ovarium preserved its natural character in every respect. The preparation is now in my m., and.—Ed.

the labour commenced the 21st. I examined this woman as soon as she arrived, but the head was so far above the superior strait that it was impossible for me to reach it. Posteriorly, and deeply descended into the excavation, I felt a resisting, smooth, immovable, and large tumour, which, at first, might have been mistaken for the head. On introducing my finger into the narrow passage between the tumour and posterior surface of the symphysis pubis, I detected a sanguineous and flattened protuberance, which, at each contraction, made an effort to descend. I made several attempts at reduction, which Professor P. Dubois also renewed on his arrival, but without effect. The woman was excessively debilitated, with frequent pulse and sunken countenance, and M. Dubois resolved to break down the head of the child, which, however, had been dead some time. The cephalotribe was introduced without difficulty, and after the head was diminished, powerful tractions were required in order to deliver it. Immediately afterward, on examining the parts, M. Dubois was very much surprised to find nothing in the vagina, the tumour having descended into the left iliac fossa, where it could be distinctly felt. The abdomen was meteoric and very painful; pulse frequent and small; and such complete prostration that the patient could scarcely articulate. These alarming symptoms, however, yielded to the influence of antiphlogistic treatment. The patient, as soon as she recovered, left the hospital, but was compelled soon to return, and in a few days died of peritonitis. Unfortunately, there was no autopsy; the patient, being a Jewess, was claimed by her friends.

A careful examination at the commencement of labour would have enabled the accoucheur to ascertain the presence of the tumour, which, if he had supported during each pain, would have permitted the descent of the head. The facility with which the tumour was reduced after the operation leaves no doubt that this might have been accomplished.

B. Vesical Calculi.—Should the tumour be composed of a calculus contained in the bladder, and its reduction prove impracticable, it would then be necessary to practise vaginal lithotomy. Lithotomy *above the pubes* has been suggested in this case, but I cannot see with what reason; for it seems to be impossible to remove the stone by the high operation, after it has descended into the excavation, and become firmly fixed there by the head. Moreover, the reasons which usually render this operation necessary do not obtain here; for the stone, no matter what its volume may be, can descend into the pelvic cavity. It can also pass the inferior strait, and, therefore, the only mode of extracting it is to perform vaginal lithotomy.

C. Distension of the Bladder.—If it be a distended bladder which offers an obstacle to the head, it will be recognised by the following circumstances: The tumour will, in general, be situated on one of the sides of the pelvis; a fluctuation is felt in it during the absence of pain, and it becomes resisting and elastic during a contraction. In addition, the introduction of the catheter, which should

always be attended to the first thing when there is a tumour in the pelvis, will immediately remove the cause of difficulty in this case.

D. *Fulness of the Rectum*.—Indurated fæcal matter may collect in the rectum to such a degree as to render delivery impossible. My father had a case of this kind, in which injections and purgatives entirely failed; he was obliged to empty the rectum with a scoop.

ART. X.—TUMOURS IN THE VULVA AND VAGINA.

Œdema of the external labia, varicose development of their veins, thrombus of the vulva and vagina, cancerous and fibrous tumours, cysts, vegetations in the parietes of the vagina, are all so many circumstances which may prove more or less serious to the mother. These tumours, when much developed, may also obstruct parturition.

§ 1. *Œdema of the External Labia*.

When the external labia become the seat of œdematous swellings, the expulsion of the head at the latter period of labour may be retarded, and the pressure it occasions may induce gangrene or rupture of the labia; such results, however, are exceedingly rare. I have always observed that females, even those in whom the vulva was extremely infiltrated, were delivered without trouble, and without experiencing any difficulty from this œdema. Should the swelling, however, be considerable, it would be advisable to afford escape to the fluid by a few punctures with the lancet.

§ 2. *Varices and Thrombus of the Labia and Vagina*.

A. *Varices*.—A varicose condition of the labia and vagina, determined by the obstructed venous circulation in the lower extremities, in consequence of the enlargement of the uterus, requires, of itself, no particular care; but the serious accidents which sometimes result from these varices call for great circumspection on the part of the accoucheur. During pregnancy, for example, but more especially during labour, the tumefied veins may rupture, and give rise to an effusion in the cellular tissue of a greater or less quantity of blood; sometimes, even, after gangrene of the parts, this effusion may take place externally, and thus the female may perish from hemorrhage.

B. *Thrombus*.—The varicose veins rarely rupture in the early months of pregnancy; for, in general, they are not sufficiently developed to become ruptured spontaneously, or even under the influence of some external cause.* Thrombus, therefore, usually does not manifest itself until the latter period of gestation, and par-

* A female aged thirty years came to La Clinique to be confined February 12, 1835; she had been affected with varicose tumours of the labia majora and vagina during the whole of pregnancy, and was much less incommoded by them in the fortnight preceding parturition. During labour, however, on April 27th, they resumed the appearance they presented during pregnancy; but their rupture was prevented by supporting them with the fingers until the head entered the genital organs and compressed them, and the labour terminated well.

ticularly at the time of labour ; sometimes, also, the varices do not appear until after delivery, and in this case they are the more alarming, because of their greater development in the relaxed tissues, and also because frequently their presence is not detected at the moment they exhibit themselves.

The formation of the thrombus commences with an acute pain, felt in the part affected ; this part swells, and becomes suddenly engorged, or increases very gradually.

Occasionally, the thrombus occupies the entire extent of one of the labia, and then extends to the excavation, containing a quantity of blood so considerable as measurably to enfeeble the patient.

The tissues are violet and tense, with a very distinct fluctuation ; often, even, the tissues rupture in consequence of the effusion, followed by more or less hemorrhage. Sometimes these sanguineous collections terminate by resolution ; they may also terminate by absorption.

Indications.—If the tumour should impede delivery, escape should be afforded to the blood by an incision, but this should never be done until the head has sufficiently descended to threaten serious pressure on the tumour in proportion as it disengages. Without this precaution, dangerous hemorrhage might ensue.

If the tumour manifest itself during pregnancy, or after parturition, and should not be much developed, we should attempt the resolution of the effused blood ; but if, on the contrary, it be large, and especially if the tissues be thin, and in a condition to cause us to apprehend gangrene, free incisions should be made, in order that the coagula and blood contained in the tumour may be evacuated. The coagula should be removed with the finger, leaving those which adhere too firmly, for fear of renewing the hemorrhage. In this case, it has been advised not to open the tumour as soon as it is formed, and I concur entirely in this opinion ; for, if the effused fluid be permitted to escape before a coagulum is formed, we expose the patient to severe hemorrhage. Therefore, as a general rule, we should delay several days before making the incision. But should the tumour assume a very rapid development, and give ground to fear an internal hemorrhage, it should be opened immediately, and then recourse be had to the tampon.

ART. XI.—EXCESSIVE SIZE OF THE FŒTUS.

The fœtus rarely acquires such a size as to render delivery impossible, when the pelvis is well formed ; most frequently, this excess of volume only retards parturition. However, unusual development of the fœtus has been known to offer an insurmountable obstacle to delivery, even when the pelvis possessed its ordinary dimensions ; and this cavity being contracted, the same difficulty would of course obtain to a greater degree. In both cases, this disproportion between the pelvis and fœtus should be overcome by tractions made with the forceps ; this instrument will alone suffice, if the pelvis and head be well formed. In the contrary case, we should proceed as has been mentioned in the article *Deformities of the Pelvis*.

ART. XII.—ABNORMAL DEVELOPMENT OF CERTAIN PARTS OF THE FÆTUS.

§ 1. *Hydrocephalus.*

Hydrocephalus is distinguished into external and internal. The former, consisting of an accumulation of fluid under the scalp and pericranium, never offers any impediment to delivery, and has been termed more especially the *sero-sanguineous tumour*. The latter, a collection of serum within the cranium, which alone should be called *hydrocephalus*, is entitled to particular attention, not only on account of the difficulty it occasions in parturition, but because it involves the safety of the child after its birth. I shall now allude to it merely in connexion with its influence on labour.

Diagnosis.

At the time of labour, hydrocephalus is distinguished by the following circumstances: the head forms a large tumour, which occupies the entire contour of the superior strait, without descending. This tumour is resisting during a contraction; soft and fluctuating in the intervals of pain, particularly at the points corresponding with the sutures and fontanelles, which are more or less open; the bones themselves are likewise, in a greater or less degree, separated. Finally, in cases of very marked hydrocephalus, the bones float, as it were, in the midst of the soft parts.

Indications.—When hydrocephalus is slight, and even in cases where the cranium contains a certain quantity of fluid, spontaneous delivery may be accomplished. The head, being extremely soft, elongates, and adapts itself to the cavity of the pelvis, and finally is expelled. But most frequently the accoucheur is obliged to aid the expulsion by the application of the forceps. Sometimes even this instrument proves unavailing; and it then becomes necessary to puncture the tumour. Under these circumstances, great care should be had not to involve the brain, but merely to evacuate the serum; for, although the life of the child will almost always be compromised by this puncture, yet infants have sometimes survived the operation. The puncture should be made with a trocar or a pointed bistoury enveloped in a piece of linen, except the extremity of the blade.

§ 2. *Ascites and Hydrothorax.*

After the delivery of the head, the labour may be obstructed by the thorax and abdomen, if they be the seat of an effusion. Hydrothorax will be recognised by the separation of the intercostal spaces, and the fluctuation perceived by the finger at these points. This fluctuation, together with the enlargement of the abdomen, characterizes ascites.

Nature may, indeed, overcome these obstacles; however, art is most frequently obliged to interfere. The accoucheur should make tractions on the head, and, if these be insufficient, he should puncture the thorax or abdomen.

A female, in whom these two complaints existed, came to La Clinique to be confined; after the puncture of the chest, it required the united efforts of M. P. Dubois and myself to extract the rest of the trunk.

§ 3. *Tumours developed on the Fœtus.*

Tumours of various kinds and size may develop themselves on the surface of the fœtus, and retard parturition, or occasion a serious obstacle to its accomplishment. It is extremely difficult to ascertain the existence of these tumours in advance; generally, we do not suspect their presence until the difficulties which they occasion in parturition become manifest. If they be accessible, they should be removed by an instrument; if not, we must proceed as in contraction of the pelvis.*

* The following case should have been inserted in another place, under the head of obliteration of the orifice; but its recent occurrence prevented this.

December 19th, 1843, Drs. Vermeule and Holden requested me to meet them in consultation, in the case of Mrs. M., who had been in labour for twenty-four hours. On arriving at the house, I learned the following particulars from the medical gentlemen: Mrs. M. was the mother of two children, and had been suffering severely, for the last fourteen hours, from strong expulsive pains, which, however, had not caused the slightest progress in the delivery. I was likewise informed that, about four hours before I saw the case, Dr. Miner, an experienced physician, had been sent for, and, after instituting a vaginal examination, remarked to the attending physicians that, "in all his practice, he had never met with a similar case." Dr. Miner suggested the administration of an anodyne, and, having other professional engagements, left the house. Mrs. M. was taken in labour Monday, December 18th, at seven o'clock P.M., and on Tuesday, at seven P.M., I first saw her. Her pains were then almost constant, and such had been the severity of her suffering that her cries for relief, as her medical attendants informed me, had attracted crowds of persons about the door. As soon as I entered her room she exclaimed, "For God's sake, doctor, cut me open, or I shall die; I never can be delivered without you cut me open." I was struck with this language, especially as I had already been informed that she had previously borne two children. At the request of the medical gentlemen, I proceeded to make an examination per vaginam, and I must confess that I was startled at what I discovered, expecting every instant, from the intensity of the contractions of the uterus, that this organ would be ruptured in some portion of its extent. I could distinctly feel a solid, resisting tumour at the superior strait, through the walls of the uterus; but I could detect no os tincæ. In carrying my finger upward and backward towards the cul-de-sac of the vagina, I could trace two bridles, extending from this portion of the vagina to a point of the uterus, which was quite rough and slightly elevated; this roughness was transverse in shape, but with all the caution and nicety of manipulation I could bring to bear, I found it impossible to detect any opening in the womb. In passing my finger, with great care, from the bridles to the rough surface, and exploring the condition of the parts with an anxious desire to afford the distressed patient prompt and effectual relief, I distinctly felt cicatrices, of which this rough surface was one. Here, then, was a condition of things produced by injury done to the soft parts at some previous period, resulting in the formation of cicatrices and bridles, and likewise in the closure of the mouth of the womb. At this stage of the examination, I knew nothing of the previous history of the patient more than I have already stated, and the first question I addressed to her was this: Have you ever had any difficulty in your previous confinements? have you ever been delivered with instruments? &c., &c. She distinctly replied that her previous labours had been of short duration, and that she had never been delivered with instruments, nor had she ever sustained any injury in consequence of her confinements. Dr. Vermeule informed me that this was literally true, for he had attended her on those occasions. This information somewhat puzzled me, for it was not in keeping with what any one might have conjectured, taking into view her actual condition, which was undoubtedly the result of direct injury done to the parts.

I then suggested to Drs. Vermeule and Holden the propriety of questioning the patient still more closely, with the hope of eliciting something satisfactory as to the cause of her present difficulty; remarking, at the same time, that it would be absolutely necessary to have recourse to an operation for the purpose of delivering her. On assuring her that she was in a most perilous situation, and, at the same time, promising that we would do all in our power to rescue her, she voluntarily made the following confession: About six weeks after becoming pregnant, she called on the notorious *Madame Restell*, who, learning her situation, gave her some powders with directions for use; these powders, it appears, did not produce the desired effect. She returned again to this woman, and asked her if there were no other way to make her miscarry. "*Yes*," says *Madame Restell*, "I

can probe you; but I must have my price for this operation." "What do you probe with?" "A piece of whalebone." "Well," observed the patient, "I cannot afford to pay your price, and I will probe myself." She returned home, and used the whalebone several times; it produced considerable pain, followed by discharge of blood. The whole secret was now disclosed. Injuries inflicted on the mouth of the womb by these violent attempts had resulted in the circumstances as detailed above. It was evident, from the nature of this poor woman's sufferings and the expulsive character of her pains, that prompt artificial delivery was indicated. As the result of the case was doubtful, and it was important to have the concurrent testimony of other medical gentlemen, and as it imbodyed great professional interest, I requested my friends, Drs. Detmold, Washington, and Doane, to see it. They reached the house without delay, and, after examining minutely into all the facts, it was agreed that a bi-lateral section of the mouth of the womb should be made. Accordingly, without loss of time, I performed the operation in the following manner: The patient was brought to the edge of the bed, and placed on her back. The index finger of my left hand was introduced into the vagina as far as the roughness, which I supposed to be the seat of the *os tincae*; then a probe-pointed bistoury, the blade of which had been previously covered with a band of linen to within about four lines of its extremity, was carried along my finger until the point reached the rough surface. I succeeded in introducing the point of the instrument into a very slight opening which I found in the centre of this surface, and then made an incision of the left lateral portion of the mouth, and, before withdrawing the bistoury, I made the same kind of incision on the right side. I then withdrew the instrument, and in about five minutes it was evident that the head of the child made progress; the mouth of the womb dilated almost immediately, and the contractions were of the most expulsive character. There seemed, however, to be some ground for apprehension that the mouth of the uterus would not yield with sufficient readiness, and I made an incision of the posterior lip through its centre, extending the incision to within a line of the peritoneal cavity. In ten minutes from this time, Mrs. M. was delivered of a strong, full-grown child, whose boisterous cries were heard with astonishment by the mother, and with sincere gratification by her medical friends. The expression of that woman's gratitude, in thus being preserved from what she and her friends supposed to be inevitable death, was an ample compensation for the anxiety experienced by those who were the humble instruments of affording her relief. This patient recovered rapidly, and did not, during the whole of her convalescence, present one unpleasant symptom. It is now ten weeks since the operation, and she and her infant are in the enjoyment of excellent health.

I omitted to mention that the urethra was preternaturally dilated. I introduced my finger as far as the bladder without any consciousness on her part, such was the degree of its enlargement.

About ten days after the operation, Dr. Forry visited this patient with me, and heard from her own lips the narrative of her case, so far as her visit to Madame Restell is concerned, and which I have already stated. On Saturday last, January 20th, Dr. Forry again accompanied me on a visit to this woman, and a vaginal examination was made. The mouth of the womb is open, and will permit the introduction of the end of the forefinger, and the two bristles are distinctly felt, extending from the upper and posterior portion of the vagina to the posterior lip of the *os tincae*, which they seem firmly to grasp. The urethra is still very much enlarged, and somewhat tender to the touch.

At my last visit to this patient with Dr. Forry, she made some additional revelations, which I think should be given not only to the profession, but to the public, in order that it may be known that in our very midst there is a monster who speculates with human life with as much coolness as if she were engaged in a game of chance. This patient, with unaffected sincerity, and apparently ignorant of the moral turpitude of the act, stated most unequivocally, to both Dr. Forry and myself, that *Madame Restell, on previous occasions, had caused her to miscarry five times*, and that these miscarriages had, in every instance, been brought about by drugs administered by this trafficker in human life. The only case in which the medicines failed was the last pregnancy, when, at the suggestion of Madame Restell, she probed herself, and induced the condition of things described, and which most seriously involved her own safety, as well as that of her child. In the course of conversation, this woman mentioned that she knew a great number of persons who were in the habit of applying to Madame Restell for the purpose of miscarrying, and that she scarcely ever failed in affording the desired relief; and, among others, she cited the case of a female residing in Houston-street, who was five months pregnant; Madame Restell probed her, and she was delivered of a child, to use her own expression, "*that kicked several times after it was put into the bowl.*"

If indeed seems too monstrous for belief that such gross violations of the laws of both God and man should be suffered in the very heart of a community professing to be Christian, and to be governed by law and good order. Yet these facts are known to all who can read. This creature's advertisements are to be seen in most of our daily papers; there she invites the base and the guilty, the innocent and the unwary, to apply to her. She tells publicly what she can do, and, without the slightest scruple, urges all to call on her who may be anxious to avoid having children. Here, then, is a premium offered for vice, to say nothing of the prodigal destruction of human life that must necessarily result from the abominations of this mercenary and heartless woman.

With all the vigilance of the police of our city, and with every disposition, I am sure, on the part of the authorities to protect public morals, and bring to merited punishment those who violate the sanctity of the law, this Madame Restell, as she styles herself, has as yet escaped with impunity.

Occupying the position I do, and fully appreciating the important trusts confided to my care in connexion with the department over which I have the honour to preside in the University, I have felt it to be a duty I owe to the community, to the profession, and to myself, publicly to expose the facts of this case; and I fervently hope that the disclosures here made may tend to the arrest of this woman, and the infliction of the severest penalty of the law.

In a professional point of view, this case is not without interest. It must be evident to all that, without the operation, the patient must have sunk. She had been in labour precisely twenty-nine hours when I made the section of her womb; and for twenty hours previously the contractions were most energetic, possessing all the characteristics of true expulsive pains. But yet, with all this suffering, not the slightest change had been effected in the parts. If nature, therefore, had been competent to overcome the resistance, sufficient time was allowed for this purpose. Longer delay would undoubtedly have placed the lives of both mother and child in extreme peril; for, from the reiterated, but unavailing efforts of the womb, there was reason to anticipate rupture of this viscus, which would most probably have compromised the life of the mother; while, at the same time, the child was exposed to congestion from constant pressure exerted on its head by the contractile force of the uterus.

I am not aware that this operation has ever been performed in this country; at least, I have found no record of it. It has, on several occasions, been resorted to in Europe, but not always with success.—ED.

CHAPTER VI.

OBSTETRICAL OPERATIONS.

AFTER having reviewed in detail the various accidents capable of complicating labour in presentation of the vertex, and having mentioned the particular rules applicable to each especial case, it now remains for me to enumerate the operations called for in the different conditions of the female, and likewise furnish a description of the instruments necessary in the performance of these operations.

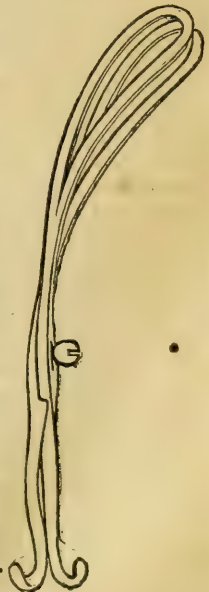
ART. I.—FORCEPS.

The forceps is an instrument composed of two branches, which articulate by means of a pivot and mortise; it is a species of pincers with which we extract the head of the fœtus from the maternal organs. (Fig. 120.)

(Fig. 120.)

Some authors have also advised the application of the forceps on the pelvic extremity; but this would be attended with great inconvenience. If the fœtus be living, the blades of the instrument, by the pressure they exert on the abdominal organs, would certainly endanger its life. And, again, whether it be living or not, the forceps cannot take a sufficiently strong hold on the pelvic extremity, and would consequently slip from the vagina. This instrument, therefore, should not be applied except on the head.

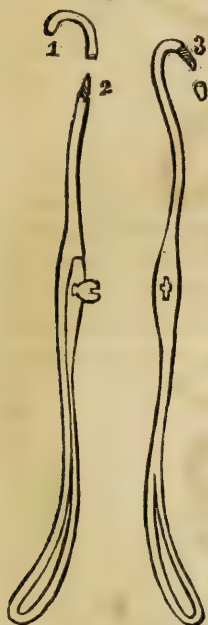
The forceps, originally introduced by Chamberlain, an English accoucheur, was at first straight, and could only be used after the head had descended into the pelvic excavation. Since the time of



Chamberlain, Levret and Smellie have suggested important modifications in this instrument; the most valuable of which is that which enables us to employ it when the head is at the superior strait.*

With this view, the borders of the instrument have been curved, the upper border being concave, while the lower is convex. This curve, or concavity, must begin at the pivot. Thus arranged, the forceps accommodates itself to the two axes of the pelvic canal, and may be carried to the womb for the purpose of reaching the head. Each branch is composed of a blade, concave internally, and hollowed in its centre; and of a handle, by means of which the accoucheur introduces the blade. These two branches are in every respect similar, except at their middle portion, where they articulate; the one has a pivot, and the other a mortise. These serve as a means of union after the branches have been introduced.

(Fig. 121.)



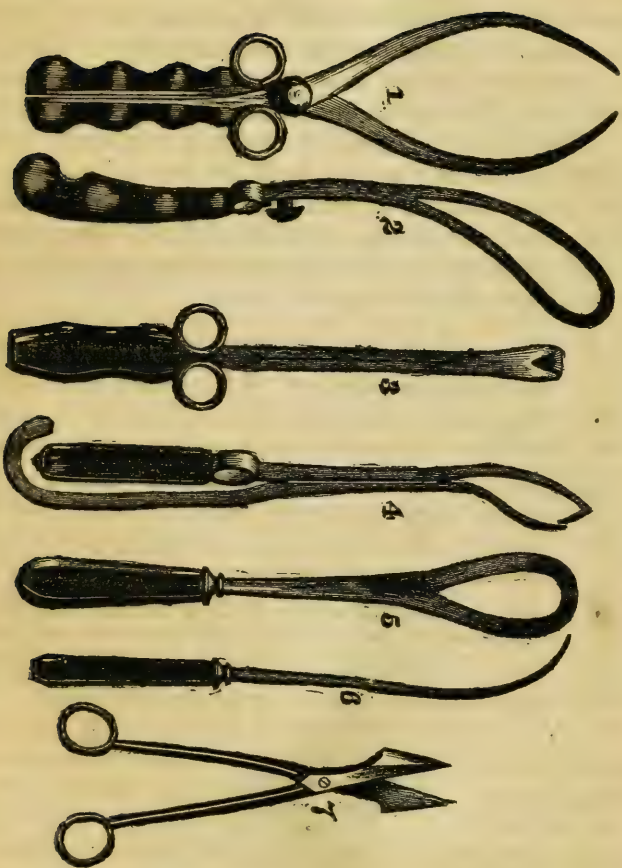
The extremity of the handle of each branch is curved in the form of a hook, in order to afford a firm hold to the hand of the accoucheur. This also enables us to employ one of the branches as a blunt hook, when we wish to bring down the hips in the pelvic presentation, they being inaccessible to the finger.

Some forceps present, at the extremity of each handle (2), a perforator on one side, and a crotchet (3) on the other. These two crotchets may, in fact, serve as blunt hooks, but the screw is apt to turn when it is fixed on the handles; but this is comparatively a slight inconvenience. A much more serious one is this: after the application of each blade, in difficult cases, in order to articulate them, it sometimes becomes necessary to impress on each handle, and with a certain degree of energy, force in an opposite direction, and the mobility of the extremity of the instrument may interfere with the certainty of these motions.

Besides, since the invention of the cephalotribe, should not the crotchet be confined to the museums, and entirely banished from practice?† It is a murderous instrument for the

* The forceps figured in plate 120 is that of Baudelocque modified by Dubois. It is the only one used at the Maternité and La Clinique.

† The crotchet is, indeed, a murderous instrument; and its use has been followed by the most melancholy results. Under the most favourable circumstances, and in the most dexterous hands, it often does harm. It is well understood that it is never to be applied except on a dead child, or where the operation of embryotomy is called for. Its chief danger, therefore, regards the mother; for the purchase which this instrument takes on the child almost always gives way, and if the accoucheur be not particularly guarded, the soft parts of the mother, the bladder, rectum, or vagina, will be lacerated, often giving rise to the most disastrous consequences. To obviate this injurious tendency of the instrument, I have caused a guard crotchet (figure 4 in the adjoining plate) to be constructed, which I offer to the attention of the profession, allowing its merits to rest upon the judgment they may form of its utility. The adaptation of this instrument to the particular indications to be fulfilled in the use of the crotchet will, I think, be found to be all that can be desired. Fig. 3 presents a front view, and in the centre of the blade is a groove for the reception of the guard, which slides with great facility to the point of the crotchet. The extremity of the guard, on its ex



mother; it can take no firm hold on the foetal body; it slips at the very first tractions, and lacerates the maternal organs. In the extraction of the foetus by the crotchet, the operator is guided by no particular rule, nor can the duration of the operation be limited. The cephalotribe, on the contrary, which can in all cases be substituted for the crotchet, can be much more promptly applied, is more certain, and attended with far less danger.

The perforator may be retained merely to take the place of Smellie's scissors: I should observe, however, that it is not so useful.

The pivot branch of the forceps is called the *pivot branch, male branch, left branch*; the other, the *mortise branch, female branch, right branch*.

Objections have been made to the designations of *left* and *right branch*, because, it is said, one branch may be confounded with the other. I cannot, I must confess, understand how this error can be committed, if it be well understood previously that the pivot branch is called the *left branch*, because it is always introduced with the left hand, and on the left side of the pelvis; and the mortise branch the *right*, because it is held with the right hand, and is placed on the right of the pelvis. Either of these three names may be given to the instrument; I prefer, however, the terms *pivot* and *mortise branch*, in order to avoid all error.

ternal surface, is convex and smooth, and so completely conceals the sharp point of the crotchet as entirely to protect the soft parts from injury, even if the crotchet should slip during the tractions made on it by the accoucheur; for, in this event, instead of the bladder, rectum, or vagina being torn by the point of the crotchet, these parts will suffer no injury, for the smooth surface only of the guard comes in contact with them. It will be seen that, at the other extremity of the guard, there is the ordinary blunt hook. This is important only as a matter of economy.

Fig. 1 represents my forceps, which I believe embodies some important improvements; whether profitable or not, must also depend on the judgment of my professional brethren. The curve of the blades, their lightness and thinness (sufficiently strong, however, for all ordinary purposes), I regard as very essential improvements. The blades of the forceps are usually too thick, unnecessarily so; for this circumstance frequently prevents their introduction, especially if the head be unusually large, or the pelvis somewhat contracted. In my judgment, therefore, the thinner the blades, consistently with the strength required, the more advantageous will the instrument be found. Instead of the pivot lock, my forceps has the button joint, and the advantage of this mode of articulation over the pivot will be at once conceded on testing the relative facility of locking the branches. It appears to me that accoucheurs generally have paid too little attention to the handles of the forceps. I certainly do attach great value to this portion of the instrument, and I am well satisfied that the indifference of practitioners to this point has frequently led to failure in its application. In order to extract the head of the foetus safely, something more is required than the mere adjustment of the blades; and if proper traction be not made, and proper *direction* given to the traction, the child will often be sacrificed, and severe injury ensue to the soft parts of the mother. To obviate these difficulties, therefore, and to furnish every facility for the safe extraction of the child, I have provided a handle (fig. 2) of sufficient length and curve. The curve at the extremity of the handle will afford greater facility to the operator, and give him more power than any forceps I have yet seen. To be satisfied of this fact, it is only necessary to apply the instrument on the manikin. The length of the handles likewise affords a proper lever for the tractions. The two rings will enable the operator to give proper direction to the force he employs, and will, at the same time, facilitate very much the lateral motions so essential to impart to the child's head during the stages of its delivery. Fig. 7 represents my pierce crane, or perforator. Fig. 5 is the ordinary vectis.

It is due to myself to state, that these instruments are not presented to the consideration of the profession from any fondness that I have for fame as an *inventor*—my ambition lies in a different channel. But they are the result of much reflection; and all I ask is, that they may receive that degree of favour to which, on fair trial, they may be found to be legitimately entitled.

* Mr. Goulding, 35½ Chatham-street, is the manufacturer of these instruments; and I take this opportunity of bearing my testimony to his superior skill and finished workmanship.—Ed.

§ 1. *General Rules.*

(1.) The forceps must be applied only on the head of the fœtus, whether the head be flexed (vertex), extended (face), or remain in the maternal organs after the extraction of the trunk. I have already stated why this instrument should never be applied to the pelvic extremity.

(2.) The head should not be too large, nor the pelvis too contracted, and especially, in this case, its deformity should not be regular; for the forceps diminishes but very slightly the volume of the head. It is not, properly speaking, an instrument of compression; it is rather an instrument of traction. If, therefore, the resistance which it has to overcome be very considerable, the soft parts covering the bones might be violently contused, and also rupture of the ligaments and relaxation of the symphysis take place, thus compromising the life of the mother without any useful result.

(3.) Above all, the position of the head should be ascertained, both by the touch and auscultation.

(4.) It is necessary, as nearly as possible, that the blades be applied on the sides of the head, so that it may be embraced in its bi-parietal diameter. In the course of this article it will be shown that there are some exceptions to this rule. The concavity of the borders should regard that portion of the head which is to be brought under the symphysis pubis.

(5.) This concavity of the borders should likewise, at the time of the introduction of the blades, regard the anterior half of the pelvis, whether directly to the left or to the right; but it should never look towards the posterior half. At the moment of delivery, it should regard directly the lower surface of the symphysis pubis. I shall mention hereafter some exceptions to this precept. It should never, however, regard the posterior half of the pelvis.

(6.) As an invariable rule, the pivot branch should always be held with the left hand, and placed on the left of the pelvis; hence the propriety of the name *left branch*. The mortise branch should always be introduced with the right hand, and placed on the right of the pelvis; hence the term *right branch*.

(7.) The hand opposite to that which guides the handle of the forceps should always be introduced, with the exception of the thumb, into the maternal organs, in order to give proper direction to the blade, and protect the vagina from the contact of the instrument.

Whatever may be the situation of the head and its elevation, this precaution should never be omitted; it is essentially important. Two or three fingers may, indeed, suffice to guide the branches on the sides of the head after it has descended into the pelvic excavation, and passed the mouth of the uterus. But when the head is still comprised within a portion of the womb, although it may have come into the excavation, and more especially if it be at the superior strait, it is very important to guide the blades into the uterine orifice with the hand, taking care to insinuate the extremity

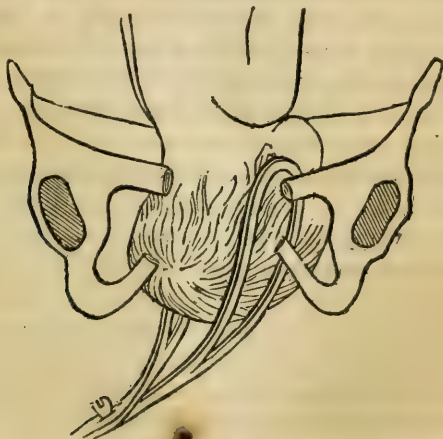
of the fingers between the orifice and head. With this precaution, the blade glides along the palmar surface of the hand, and penetrates the cavity of the uterus without passing on the outside of the neck, and pressing against the cul-de-sac of the vagina, which it might perforate if the instrument were pushed with much force, which, however, should never be attempted. Special rules will demonstrate the value of these precepts.

(8.) The second branch is always introduced above the one first applied, for the presence of the perineum, and its resistance, render this necessary in most cases.

(9.) Which branch should be introduced the first? We may commence indifferently with one or the other; but if it be the mortise, as the pivot branch must almost always be introduced over it, because, in this case, the pivot branch is the second introduced, this latter will be placed over the mortise, and in order to articulate them, and bring the pivot branch under the mortise, we will be under the necessity of separating the handles of the forceps. This separation will not be attended by any inconvenience if the head have completely passed from the orifice, but it will contuse and lacerate, more or less seriously, this part, if the head should still be retained within the neck of the uterus. In order, therefore, to avoid this result, we should always commence with the pivot branch. With some few exceptions, this method is adopted by M. P. Dubois and myself.

Whenever the branches are to be placed on the sides of the pelvis, at the two extremities of the transverse diameter, there can be no objection to the pivot branch being introduced first. But, in the diagonal positions, when the head is in the pelvic cavity, in order to grasp it properly in its bi-parietal diameter, one branch must be in front, and the other posteriorly (fig. 122). If, therefore, we com-

(Fig. 122.)



mence with the pivot branch, and this branch be introduced posteriorly, its application will be quite easy; but it occupies space in the pelvis, will push the head under the pubes, and render the introduction of the second much more difficult, and sometimes impossible.

And, moreover, after unavailing attempts to introduce the mortise branch, we shall be compelled to withdraw the pivot branch in order to allow more space for the introduction of the mortise (fig. 122).^{*} Crossing will be the necessary consequence of this application, since the pivot branch, being applied second, will be placed on the mortise. If the perineum, however, should be very distensible, or should have been lacerated in previous deliveries, we may endeavour to place the pivot branch under that of the mortise, and thus avoid the crossing.

With a view to render more easy the application of the branch which should be in front, Madame Lachapelle has recommended to introduce it always the first, because it is the most difficult ;† as we shall see when describing the rules proper for each application, we are rarely obliged to follow the excellent precept of Madame Lachapelle ; for we can almost always commence with the pivot branch, and thus dispense with the crossing. It will also be seen that there is only one case (the left anterior occipito-iliac position) in which my directions vary from those of this celebrated sage-femme ; and, in consulting the treatise of Madame Lachapelle, it will be found that she herself very frequently departs from the precept she has inculcated. In fine, we may commence with either branch, but it is preferable, if it can be done, to commence with the pivot branch, in order to avoid the crossing. If the application of the pivot branch, introduced first, should obstruct the introduction of the mortise branch, it must be withdrawn, in order to give place to the latter ; and we shall then be obliged to have recourse to crossing, unless the perineum allows the pivot branch to pass under the mortise. This method is generally adopted by all accoucheurs, and M. P. Dubois is constantly in the habit of following it himself.

(10.) Towards what point of the pelvis should the branches be directed ? Should they be carried directly to the place they are intended ultimately to occupy ? or should they be directed first to the posterior part of the pelvis, to be afterward brought to their proper situation by the hand introduced into the maternal organs, and by a vibratory movement imparted to the handle of the instrument ?‡ I adopt this latter mode, after the example of M. P. Dubois.

^{*} In this figure, and in all those which present a front view of the application of the forceps, the head being in the cavity, the forceps is situated too perpendicularly ; but we cannot represent it in a more horizontal position without producing a shortening as difficult to express as to comprehend, and which would frequently give only a very incorrect representation of the fact I wish to express. An exact idea of the direction of the forceps can only be had by figures seen in profile, excepting, however, those front views where the forceps is represented reversed on the abdomen of the female, when the head descends, which are extremely correct, and also those showing the application of the forceps at the superior strait.

† I cannot understand why it should be laid down as a precept to apply first the blade which should be at the posterior part of the pelvis on account of its difficulty, when every one knows it is the most easy of application. The precept of Madame Lachapelle is much more natural, and is readily understood.

‡ I can see no advantage in this rule ; but, on the contrary, trouble may arise from it. Suppose, for example, the head is in the pelvic cavity, and it becomes necessary to apply the forceps. If the head be situated directly in the pelvis, with either the occiput or fore

However, as will be shown hereafter, it may become necessary, in the diagonal or transverse applications, to carry at first to the point it is intended to occupy, the branch which is to be placed above; this will depend on special and respective dispositions of the head and pelvis, which it is not possible to know in advance.

The sagacity of the accoucheur will alone enable him to appreciate these circumstances; but the exceptions do not destroy the rule.

(11.) The branches should never be pushed with force; they should, as it were, place themselves.

(12.) The orifice of the uterus must be dilated or dilatable.

(13.) We should articulate the instrument with great care, in order not to injure the orifice; and, in case of crossing, before articulating we should separate the branches from each other as little as possible, always with the view of protecting the uterine orifice.

(14.) As soon as the articulation is completed, we should ascertain that the head is properly seized, and that the maternal organs are not comprised between the head and the forceps. The head is well seized when, in making slight tractions on it, we feel that it becomes, as it were, a part of the instrument. In order to be certain that the parts of the mother are not held by the forceps, it will be sufficient, after having articulated it, to exert a certain pressure on the extremity of the branches in approximating the handles towards each other; if the pressure do not occasion pain, the operation may be proceeded with; in the contrary case, the instrument should be disarticulated, without withdrawing it, and an effort should be made with the finger to detach the part that has been included within it.

(15.) It has been generally advised, in order to ascertain that each branch is well applied, to push the respective branches gently inward before articulating them. If the branch meet with an obstacle, it is in consequence of its improper application; it should be withdrawn, and again introduced properly. If it should not be impeded, and in slightly pulling it outward it experience resistance, then we know the head is judiciously seized.

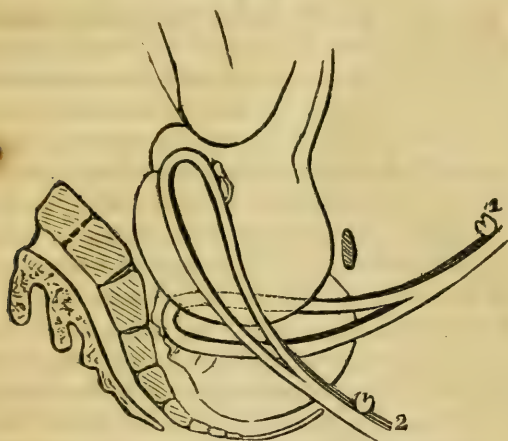
This precept, excellent in itself when the head has not passed the uterine orifice, is not applicable without some restriction to cases in which the head has completely freed the orifice, this latter encircling the shoulders of the fœtus. To make it, therefore, absolute, would be to lead young accoucheurs into grave error, and cause them to imagine difficulties which do not exist.

In fine, when the head has arrived in the cavity, in the secondary antero-posterior positions, the occiput or forehead corresponding to the posterior portion of the pubes, the forceps is applied directly according to the axis of the inferior strait only (fig. 123, No. 1),

head regarding the pubes, nothing would be easier than to introduce the instrument, taking the hand previously passed into the vagina as a guide, on the sides of the head at once, without previously carrying the blades to the posterior part of the pelvis. This latter procedure might result in injury to the scalp of the child, in consequence of the efforts made to bring the blades to the lateral portions of the head. But if carried to these points when first introduced, no such difficulty would follow.—Ed.

and then the extremity of the blades always passes to the posterior wall of the cavity; in this case, even, we may employ the straight forceps; if, therefore, we should conclude that, because the branch meets with an obstacle, it is badly applied, we withdraw it in order to give it a better direction; but it always encounters the same impediment, no matter what may be done, for if the branch be properly introduced, it cannot be directed otherwise.

(Fig. 123.)



In the diagonal positions, the extremity of the branch which is situated in front, enters the uterus, because the anterior wall of the pelvis is much shorter than the posterior; the branch which is situated posteriorly, for the contrary reason, penetrates the uterus less deeply than in the antero-posterior positions. The rule, therefore, will be applicable in this case only to the branch which is in front, and not to that which is posteriorly, since this latter will always encounter the posterior wall of the cavity.

But when the head has not entirely passed the uterine orifice, and when it is above the superior strait, the application of the rule is useful. In fact, the forceps must then accommodate itself to the direction of the two axes of the pelvis, by pushing the perineum backward (fig. 123, No. 2), and, consequently, the branches must of necessity penetrate the uterus.

(16.) The tractions, as far as possible, should be made during the pain, and always in the direction of the pelvic axes (fig. 123, Nos. 1 and 2).

All these general rules will be more readily comprehended and recollected when viewed in connexion with the special rules adapted to each position of the head.

§ 2. *Position of the Female, and preliminary Precautions.*

When the operation has been decided upon, the patient should be placed in a convenient position. This varies according to different countries; the one usually adopted in France is the following: the female is placed across the bed, one of the sides of which should be supported against the wall. Several pillows or

cushions are piled between her back and the wall; a board or hard cushion is introduced under the upper mattress, so that the breech may rest on it. It will also be well to place under the breech, in order that it may not sink into the mattress, a linen folded eight double; then we put under the patient a cloth extending to the ground, which will receive the fluids that may escape from the organs. The anterior commissure of the perineum should correspond exactly with the border of the bed; and if there should be difficulty, the breech should be brought even beyond this point. The inferior extremities are flexed, and covered each with a sheet, and the heels rest on the knees of two assistants, seated on each side of the patient, but sufficiently remote not to incommode the operator. A third assistant is placed near the patient, for the purpose of encouraging her, and administering whatever may be necessary. If the patient should be restless or intractable, another assistant must steady the pelvis, to prevent any movements which might interfere with the operation. This position is indispensable in most cases; and it is the more necessary, as the head is higher up in the pelvis. When, however, the head is at the inferior strait, the application of the forceps being generally very easy, any of the arrangements calculated to alarm the patient may be dispensed with. It will be sufficient to bring her to the extremity of the bed on which she lies, taking the precaution to place a support under this extremity, or directing the assistant to keep it steady. In this way, the feet of the patient rest on the bed itself, and do not, therefore, require to be supported.

In England, the female is delivered on her side, as in spontaneous labour.

In all cases, it will be the duty of the assistant to present the branches of the forceps to the operator.

Finally, everything must be prepared which may be necessary for the mother during the operation, or for the infant after its extraction; such as vinegar, salts, cold and warm water, a feather, &c. (See *Spontaneous Delivery*.)

Napkins, oil, or some mucilaginous substance, together with a pair of scissors, should also be placed at the side of the operator.

After all these precautions have been taken, the operation should be commenced.

Almost all writers recommend a rule which I do not think it is wise always to observe. They suggest that, before applying the instrument, it should be shown to the patient, and its ingenious mechanism explained to her. M. P. Dubois always adopts a contrary course; and as for myself, I must confess that I do not follow this precept in practice.* I think it is much more likely to

* The general precepts of our author with regard to the application of the forceps are truly admirable, and well deserve the attention of the pupil. But I most decidedly differ from him in regard to the furtive use of the instrument. Nothing, in my opinion, can justify the application of the forceps without previously obtaining the consent of the patient, unless it should be that she is in a state of unconsciousness. I have never found any difficulty in overcoming the prejudices or fears of my patient; and when the use of the forceps is indicated, it is far better that she should be apprized of the fact, and receive from the ac-

alarm the patient than to tranquillize her, unless her mind should be unusually firm. The sight of the instrument alone terrifies most women; they revolt at the idea of its application, and cannot appreciate the perfection of an instrument which is to be employed on themselves. Some, even, on beholding it, fall into convulsions.

The course which experience has taught me to be the most reasonable is the following: keep the patient in ignorance of what you are about to do, assure her that the hand alone will suffice, conceal the instrument from her sight, and be careful not to make any noise in locking the branches. With this view, the forceps should be enveloped in a cloth, and placed on the floor at the foot of the bed.

However, as Madame Lachapelle observes, this course will not tranquillize a woman of great moral energy. The accoucheur, therefore, must decide, from the character of his patient, the course to be pursued.

Before placing the instrument in the cloth, the blades should be properly warmed by putting them in warm water; but it must be ascertained that the temperature is not too high; then they should be well lubricated with some oily material.

§ 3. *Cases in which the Forceps should be employed.*

In the enumeration which I have already made of the various accidents capable of complicating labour, it will have been seen that the use of the forceps is indicated under the following circumstances:

Disproportion between the dimensions of the head and those of the pelvis, whether this disproportion refer to the size of the head or to the contraction of the pelvis.

Accidents of a nature to compromise the life of the mother or infant, when version is not practicable.

Inclined and irregular presentations of the vertex, which are not corrected spontaneously, or which cannot be reduced by the hand of the accoucheur.

Finally, anomalies in the movement of rotation of the head, inertia of the womb, resistance of the external genital organs, whether the head present first, or after the delivery of the trunk.

This instrument may, moreover, be applied when the head is situated at the superior strait, after it has descended into the pelvic cavity, or become arrested at the inferior strait, and also in all the positions which the head can assume. Its application being the more easy in proportion as the head has advanced, I will commence with the vertex, the head being at the inferior strait, after having executed its movement of rotation; and thence I shall proceed

coucheur an explanation of its *modus operandi*. Let her be assured that it is not a *cutting instrument*, that it will prove harmless to her child, and that she herself will not be injured by its judicious employment. I am in the habit of adopting a rule which I heard suggested by my old master, the venerable *Capuron*; it is this: I request the patient to put her two hands together; I then embrace them within the branches of the forceps, and make gentle traction, and when she is informed that this is the manner in which the instrument will act on the head of the child, she becomes quite easy in her mind, and consents at once to the application.—Ed

with the use of the instrument, and point out its application in the cavity, and at the superior strait. In this way, I will pass from the simple to the more complex indications.*

§ 4. *Application of the Forceps in Presentation of the Vertex, the Head being at the Inferior Strait.*

When the head has descended into the cavity, it may be in re-

* The pupil must remember that, occasionally, the use of the forceps will be indicated when there is not the slightest disproportion between the fœtus and maternal pelvis. The labour, for example, may have been perfectly natural, and all things have gone on well until the head reaches the inferior strait. At this stage of the labour, either convulsions, hemorrhage, exhaustion, hernia, hemoptysis, rupture of the womb, &c., &c., may occur, and render immediate delivery absolutely necessary. It is important that the rule for artificial delivery, under these circumstances, should be clearly understood, and that the lessons inculcated by some of the latest English writers on the subject should be suffered to pass unheeded. I cannot but view the directions given by these authors, with regard to the time of applying the forceps, as fraught with evil not only to the safety of both mother and child, but also to the reputation of the accoucheur. Now, for example, let us take Dr. Ramsbotham, one of the most recent authorities on the subject, and whose work is, no doubt, in the hands of many of our American students. In speaking of the rules for the application of the forceps (page 216), he says, "Before the forceps can be applied, the os uteri must be entirely dilated, and the head must have come down into the pelvis sufficiently low to enable us to feel one or both ears distinctly. It is necessary to touch one or both ears, because they become the guide to the proper adaptation of the blades." Again, at page 228, the same author observes, "If no progress have been made for a number of hours, and, especially, if impaction should have existed for four hours, then, provided an ear can be felt, and the parts are not so rigid as to endanger laceration, we are justified in employing the forceps." The underlining here is my own, and I wish particularly to call the attention of the pupil to the words as italicised. According to Dr. Ramsbotham, and almost all English authors agree with him, the ear of the child's head must be felt before it would be justifiable to apply the forceps. In the first place, I would observe that my own experience teaches me that it is not an easy thing to reach the ear, even when the head is at the inferior strait; and, secondly, if the rule, as laid down by Dr. Ramsbotham, be adopted, fatal consequences must inevitably frequently ensue to both mother and child.

To illustrate this point, let us suppose that the head is in the pelvic cavity; the mother suddenly becomes exhausted, either from hemorrhage, or the fatigue of antecedent effort. No matter what the cause may be, she is exhausted, and immediate delivery is indicated. The accoucheur introduces the finger, and endeavours to reach the ear; he does not succeed; the patient's situation becomes more and more alarming; he again makes the attempt to find the ear; he fails; he feels in his heart, indeed, everything clearly indicates that the forceps should be applied, but he cannot reach the ear; he delays, in the hope that "the head may come down into the pelvis sufficiently low to enable him to feel one or both ears distinctly." Alas! this proves fallacious. The assistants supplicate him to do something to relieve the patient, for they see she is dying; and what will it avail, under these melancholy circumstances, for him to exclaim, "I can do nothing, for the ear of the child cannot be felt!" His patient, of course, sinks, and here are two lives sacrificed because of a precept in which I can see neither propriety nor meaning. Let it not be supposed that this is an overdrawn picture. Such results must inevitably ensue from an adherence to the rule to which I have just alluded. When Dr. Ramsbotham says that "it is necessary to touch one or both ears, because they become the guide to the proper adaptation of the blades," he makes use of language that, I must confess, surprises me not a little. If there be any meaning in what he says, it is simply this, that unless the ears are felt, it will be impossible to know how to arrange the blades of the forceps, because of the ignorance of the accoucheur as to the position of the head. Admitting the truth of this author's reasoning, when the head is at the inferior strait, which I most unequivocally deny, how is the position to be ascertained when the head is still at the superior strait? Certainly not by feeling the ears, for these cannot be felt once in a thousand times, before the head has descended into the pelvic cavity. The position of the head can be told both at the inferior and superior strait by the direction of the fontanelles, sagittal suture, &c., &c.; and these will indicate the manner of applying the forceps, and of seizing the head in its bi-parietal measurement.

The rule, therefore, for the pupil to adopt, is to pay no regard either to the ear or the length of time the head may have been in the excavation, but to proceed to artificial delivery the moment the life of either mother or child becomes seriously endangered. The very essence of forceps delivery, that which commends it so strongly to the consideration of the profession, is the ability with which it enables us to save both mother and child. Therefore, if artificial delivery be indicated, have recourse to it before the life of the child has been sacrificed, or the vital force of the mother so far expended as to render her recovery extremely doubtful. I do not advocate a meddling midwifery, but I do most strenuously recommend such an application of the means put into our hands of affording relief as will achieve the maximum of good to both mother and child.—Ed.

lation with all the points of the circumference of this cavity. As, in each of these positions, the particular rules for the application of the forceps vary, we shall treat successively of the eight principal positions: *occipito-pubic, occipito-sacral, left anterior occipito-iliac, right posterior occipito-iliac, right anterior occipito-iliac, left posterior occipito-iliac*; finally, *the transverse left and right occipito-iliac*. Before attempting to apply the forceps in the pelvic cavity, we should first ascertain whether the head has completely passed the orifice of the uterus, or whether it has descended into the cavity entirely covered by the inferior segment of this organ.

This precept is of essential moment, and yet it has been omitted by certain authors; and even those who have spoken of it have done so without sufficiently insisting on its value. It frequently happens that, from the commencement of labour, the head pushes before it the inferior segment of the uterus, which is thin, and the orifice of which is not dilated; it moulds this segment on itself, and if the accoucheur should not be aware of the possibility of this accident, he may readily imagine that the head is naked, inasmuch as the thinness of the inferior wall of the uterus, which favours its propulsion and descent, enables him to feel distinctly the bony resistance of the head, and often, even, the sutures and fontanelles.

Now, if the accoucheur should arrive at the bedside of his patient at this period, he might suppose, in consequence of the descent of the head, which he believes to be free or naked, that the labour is much farther advanced than it is in reality; and, again, the sojourn of the head in the cavity until the dilatation shall have become complete, may induce him to imagine that the labour is prolonged by the resistance of the parts; and he resolves on the use of the forceps. Judge, therefore, of the evils that must result, if he seize at the same time the head and inferior segment of the uterus. It is only necessary to be advised of the possibility of this accident to avoid it. If the accoucheur pass his finger carefully over the tumour, he will readily perceive whether the head is naked or covered; he will find the orifice thin and flattened on the head, and the finger may enter it; it will then be necessary to await its complete dilatation. As soon, however, as this is accomplished, all interference will be useless, for the head will pass the inferior strait without difficulty.

Finally, the head may have partially passed the orifice, and be encircled by it. In this case, the orifice is also very thin; we must be assured of this circumstance in order to guide properly the blades within the orifice, and not carry them in the cul-de-sac of the vagina.

In a word, before applying the forceps in the cavity, the condition and situation of the uterine orifice must be known. If it can be readily reached with the extremity of the fingers, the branches should be carefully directed to it; then the blade should be passed over the scalp of the head in order that it may penetrate the orifice. If the extremity of the blade should engage in a fold of the scalp,

it should be carried slightly outward, and then its introduction should be continued. If the orifice cannot be reached, it must be ascertained whether the head is entirely free, or whether it has pushed before it the thin and undilated inferior segment of the uterus.

Operation in the Occipito-pubic Position.

The finger can readily distinguish the situation of the head; the posterior fontanelle occupies the centre of the vulva; the sagittal suture is directed from above downward and from before backward; the occiput is consequently under the pubes, and the forehead in the concavity of the sacrum; the two sides of the head correspond to the sides of the pelvis.

The head is retained in the genital organs, either in consequence of inertia of the womb, a slight contraction of the inferior strait (rare), or of the resistance of the parts themselves. This circumstance is, of all others, the most frequent.

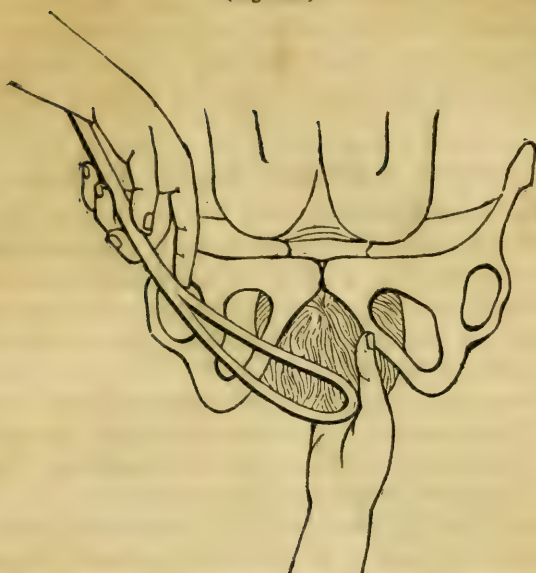
In order that the head may be grasped by its bi-parietal diameter, the two blades should be placed on the sides of the pelvis, along the two extremities of the transverse diameter. As they occupy an analogous situation, one to the left, and the other to the right, it is a matter of indifference which is introduced first; one is as easily applied as the other; but, in order to avoid crossing, we should commence with the pivot branch.

The operator rests himself on one knee;* he then oils the palmar and dorsal surface of the right hand, and introduces it entire, except the thumb, into the maternal organs, posteriorly in the concavity of the sacrum, and in the direction of the left sacro-ischiatic ligament; with this hand he again satisfies himself as to the situation of the head and uterine orifice; and if the orifice have accompanied the head low down, which is rare when it is retained in the genital organs, the extremity of the fingers should be carefully introduced within it. In order to conduct the extremity of the blade within the orifice, the pivot branch must be held with the left hand, as we would hold a pen; then resting it obliquely on the right groin of the patient, it should be made to penetrate the vulva in the direction of its axis, sliding along the palmar surface of the right hand, and supporting the extremity of the blade on the head of the fœtus; in proportion as the branch is introduced, the handle of the instrument must be gradually depressed between the thighs of the patient, bringing it towards the median line, and, at the same time, with the hand already introduced, the extremity of the blade should be made to execute a slight movement of the fourth of a circle, which will place it on the side of the pelvis, where it is to remain.

This branch thus applied is to be intrusted to an assistant, who maintains it in its situation with one hand passed under the thigh

* It will be found much more convenient for the accoucheur, and certainly much more agreeable to the patient, if he will seat himself on a chair instead of resting on his knee. The chair should stand so as to enable the accoucheur to be placed between the thighs of the patient; and the assistants, seated on each side, must take care not to crowd him.
—ED.

(Fig. 124.)



of the patient, and arranged in such manner as not to embarrass the operator.

The assistant must be instructed not to approximate the handle of the blade introduced to the left thigh, for it would then act as a lever, throwing the head to the right, and preventing the adjustment of the second blade, which should be directed to the right side.

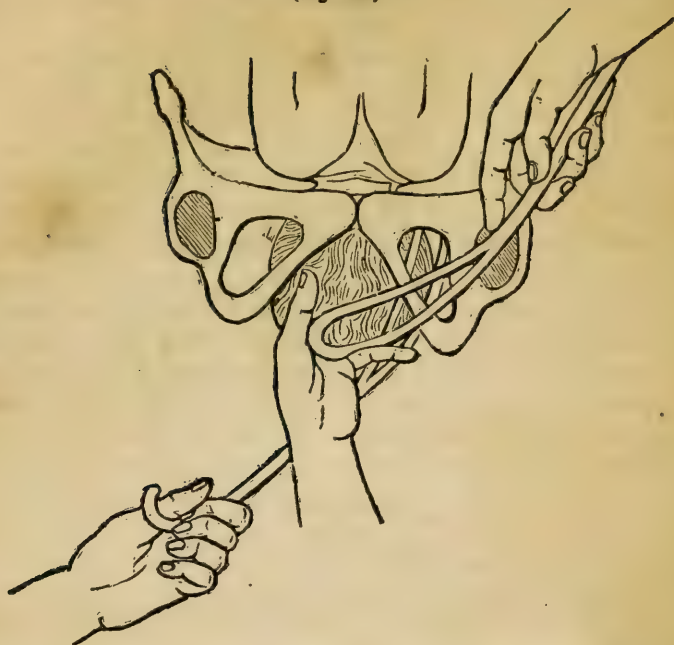
Before proceeding to the application of the second or mortise branch, the accoucheur should lubricate his left hand, and not forget to dry properly his right hand, which is to hold the branch, in order that the handle of the instrument may not slip between his fingers.

The left hand introduced into the vagina serves as a conductor for the mortise branch, which is held with the right hand, and introduced, like the preceding, at first posteriorly and to the right, then brought to the side of the pelvis by the left hand, which elevates the blade, while the right hand depresses the handle.

Occasionally, in applying the second branch, we can only introduce a few fingers of the left hand, which renders the adjustment of this branch less certain. The accoucheur, under these circumstances, should be exceedingly guarded, and glide as exactly as possible the extremity of the blade over the scalp of the fœtus. The mortise branch being properly introduced, the accoucheur rises and stands up;* he then seizes the branches with the corresponding hands (the pivot branch with the left hand, the mortise branch with the right), and places them parallel to each other, bringing the pivot towards the mortise, and articulating them.

* There is no necessity for the accoucheur to rise. He should, on the contrary, retain his seat, and proceed to the completion of the operation with as little disturbance as possible. Many patients are very easily alarmed; and the more tranquilly the accoucheur performs his duties, the more gratefully will they be acknowledged.—ED.

(Fig. 125.)



When the two branches are placed at the same height, exactly parallel to each other, and the mortise branch is over the pivot branch, the articulation is quite easy; as soon as the pivot has entered the mortise, the assistant turns it, and the junction of the two branches is complete.

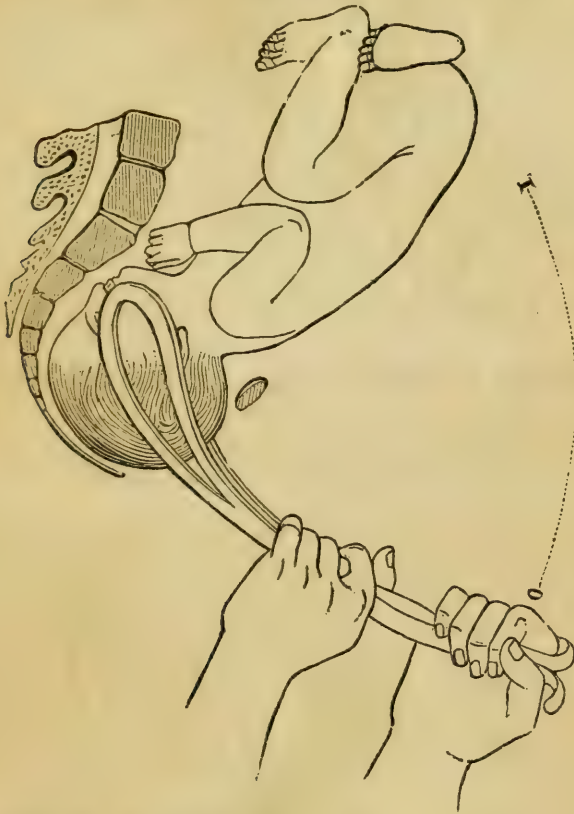
The accoucheur then seizes the forceps, the left hand being above and near the articulation, the right hand below, at the extremity of the handles, with the thumb to the right of the patient; then, by the aid of slight lateral movements, combined with a movement of direct traction, following the axis of the inferior strait, he draws on the head from below upward, elevating the handle of the instrument towards the pubes, from O to I, in proportion as the head engages in the inferior* strait; these tractions should be made during the

* I have seen persons apply the forceps; and, after having introduced them with tolerable dexterity, fail in extracting the head, simply because of the rude and unskilful manner in which they attempted to pull upon it. The lateral movement imparted to the forceps by the accoucheur is most important, and should never be omitted; for if only direct force be employed, the delivery will not only be tedious and unnecessarily painful, but the head of the child may be seriously endangered. Therefore, after the instrument has been properly applied, and the joint articulated, the accoucheur should, during a pain, *commence his tractions with a lateral sweep of the forceps*, at the same time using a certain degree of direct force and this lateral and extractive traction must be combined until the delivery of the head is completed. The force employed should be two thirds lateral and one third extractive. The advantage of this degree of combination will be made manifest when practising on the manakin. And I cannot too strongly impress on the pupil the value of this machine. To become a dexterous and safe obstetric operator, two things are necessary, and they are so essentially material that, if they be neglected, failure must often be the result. In the first place, the accoucheur should have a clear perception of the principles on which rests the mechanism of natural labour. And, secondly, he should reduce those principles to practice on the manakin. The manakin is as important to the obstetrician as the cadaver to the operative surgeon; and if practitioners could be made to appreciate the benefits to be derived from practising on it, much good would necessarily result to those who, in the hour of their peril, need not only the sympathy, but the consummate skill of their medical attendant.—ED.

pains, if there be any ; the patient, too, should be requested to bear down in order to assist in the extraction of the head. But when the perineum begins to distend, it should be well supported, and the patient desist from all effort, and the accoucheur himself should cease his tractions ; indeed, if the contractions be energetic, and the female experience an uncontrollable necessity to bear down, the forceps should retain the head in place, and not extract it.

Without these indispensable precautions, the head might be expelled too rapidly, and more or less injury occur to the genital organs.

Fig. 126.)



In this operation, we should simulate the course of nature in spontaneous delivery, in which the head does not pass the orifice of the vulva suddenly, but after repeated and successive efforts, thus producing a gradual dilatation of the orifice. This wise provision of nature should serve as a guide to the operator in all cases, and more especially in a primipara.

Thus, after this first period of repose, the accoucheur should

The direction of our author with regard to the elevation of the handle of the forceps in proportion as the head distends the perineum should, on no account, be lost sight of. The object of the elevation is to bring the chin from the sternum, or, in other words, to effect the movement of extension, and this can only be done (when the occiput is under the symphysis pubis) by raising the handle of the instrument as the head advances ; and when the head is completely out of the vulva, the handle of the forceps will describe a right angle with the abdomen of the mother.—ED.

renew his tractions, or permit the efforts of the uterus to cause the head to progress; then he must again support it, and recommend the patient not to press down; the perineum should also be properly sustained. Finally, after four or five successive periods of rest like this, during which the parts become gradually accustomed to the presence of the head, which dilates them little by little, the operator should complete the extraction with great care. With this view, he should raise the handle of the forceps towards the abdomen of the mother; and at this moment the perineum requires to be very accurately supported by an assistant.

If there should be no one present of sufficient intelligence to perform this duty, the forceps should be held with the left hand passed over the right thigh of the patient; and the accoucheur, standing on the right side, should, with the other hand carried under the right thigh, support the perineum himself.

(Fig. 127.)



It is only with these wise precautions and careful manner of proceeding that the soft parts can be protected from harm. If the head be extracted too rapidly, the perineum, even if it should be supported, will still be more or less seriously injured; the external fibres of the sphincter ani, and even the intestine itself, may participate in this laceration. I have already alluded to the melancholy consequences of this accident, rendering the unfortunate sufferer an object loathsome to herself and friends, and at once de-

stroying all physical and moral comfort. Thus, these precautions cannot be too rigidly insisted upon, in order that the patient may be protected against these effects, and the young practitioner saved the mortification of occasioning them. Unfortunately, these occurrences are not rare, and yet in no work are they sufficiently set forth.

All practitioners know, however, the difficulty they encountered, in their first use of the forceps, in resisting the impatience they experienced to terminate the delivery rapidly; an impatience increased by the cries and supplications of the female, and the importunities of the assistants. They understand, too, how important it is to admonish young practitioners on this subject.

It must also be admitted that, notwithstanding all imaginable care, lacerations of the perineum will sometimes occur. The perineum is occasionally so weak, inelastic, and, if I may be permitted the expression, so friable, that it has no power of itself to resist the passage of the head; and we should, in this case, be the more vigilant. In a female whom M. P. Dubois was obliged to deliver with instruments, on account of inertia of the womb, the perineum exhibited all these characters; and, in defiance of every precaution, it was lacerated in a small portion of its extent.

Sometimes, also, the perineum is so resisting that extraction of the fœtus, rendered necessary by inertia, cannot possibly be accomplished without resulting in laceration. Under these circumstances, it would be proper, since the passage must be enlarged, to make a small incision on the right or left side of the perineum, rather than expose it to rupture. In fact, spontaneous laceration of the perineum always takes place on the median line, and if it should extend to a certain distance in this direction, it may involve the anus; while a lateral incision may be enlarged by the passage of the head, without compromising any essential part. I have seen M. P. Dubois have recourse to this alternative; the incision healed perfectly, without leaving the slightest trace, and this is what usually occurs.

After the head is delivered, the instrument should be removed by separating the blades. If there should be contractions, the expulsion of the shoulders will not be long delayed; but should there be inertia, it will be necessary to make slight tractions on the head, favouring the movement of external rotation, the occiput towards the left thigh, if the primitive position were the left occipitiliac, towards the right thigh in the contrary case.

If this rotation cannot be effected without great difficulty, or if, notwithstanding its accomplishment, the shoulders resist the tractions, the accoucheur must introduce the index finger of the right hand *over* the hollow of the axilla situated on the left of the woman, and the index finger of the left hand *under* the hollow of the axilla on the right; then the index finger of the right hand should be depressed, while that of the left is elevated. By this contrary movement, the right index finger will bring into the concavity of the sacrum the shoulder situated on the left of the pelvis, while the left

index finger places under the pubes the shoulder, which was on the right of the pelvis. The delivery, in this case, must be the more expeditious, as the labour may have been more protracted, or the danger of the child more imminent.

Operation in the Occipito-sacral Position.

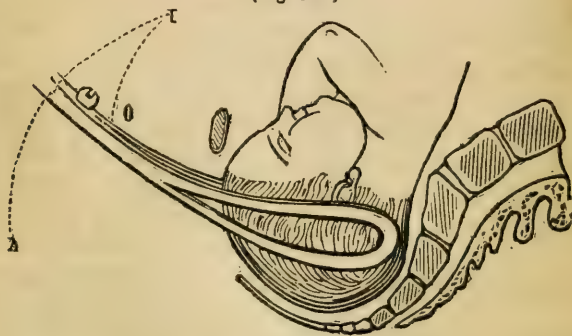
The occiput, in this position, is in the cavity of the sacrum; the forehead is placed under the pubes, and the two sides of the head correspond to the two sides of the pelvis.

In this case, the occiput should be disengaged posteriorly. The application is precisely the same as in the preceding position; the disengagement alone varies.

In this position, at the moment of spontaneous expulsion, the head is very much flexed; the occiput and forehead pass out simultaneously, the forehead under the pubes, the occiput in the anterior commissure of the perineum. To arrive at this result in the extraction of the head, the accoucheur must commence by raising the handle of the forceps from O to I, at the same time that he makes direct tractions; and when the occiput is about passing the commissure of the perineum, he must cease his tractions, and depress the instrument from I to A, in order to disengage the forehead and face from under the symphysis pubis.

The perineum should be strictly attended to, for it encounters much more danger here than in the preceding case.

(Fig. 128.)



Operation in the Left Anterior Occipito-iliac Position.

In this position, the occiput is to the left and in front, behind the cotyloid cavity; the forehead rests on the right sacro-iliac symphysis; the right side of the head corresponds to the right cotyloid cavity; the left side to the left sacro-iliac symphysis.

In order to seize the head in its bi-parietal diameter, one branch should be placed in front and to the right, the other posteriorly and to the left. To avoid all error, the accoucheur should ask himself which part of the head is to be brought under the pubes. In the presentation of the vertex, that portion of the head corresponding to the front of the pelvis should always be brought under the pubes; now, as the occiput lies behind the cotyloid cavity, it is to the left and in front, and should, therefore, be placed under the pubes. For

this purpose, the concavity of the borders of the instrument, after being applied, should regard the occiput and the left cotyloid cavity.

But, before introducing the branches, in order exactly to understand how they should be placed (which in front, and which posteriorly), we should present the instrument already articulated in the situation it is to assume after it is applied. In this case, the concavity of the borders must look to the left and in front. Then, without changing the direction of the forceps, we disarticulate the instrument, and see that the pivot branch should be placed posteriorly and to the left of the pelvis, and the mortise branch in front and to the right.

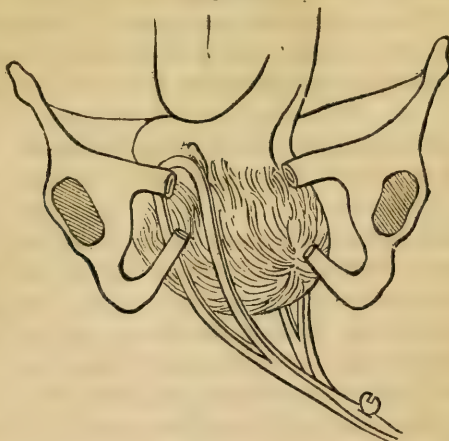
After previously introducing the right hand into the concavity of the perineum, the accoucheur seizes the pivot branch with the left hand, and introduces it by gliding it on the right hand, and directs it to the left sacro-iliac symphysis. This branch must not be brought on the side of the pelvis, as in the preceding cases. In proportion as the branch penetrates, he depresses slowly the handle, and confides it to an assistant, who must retain it carefully in this exact situation.

The mortise branch must be placed in front, and to the right of the pelvis, behind the right cotyloid cavity, with which the right side of the head corresponds. This branch is seized with the right hand, and glided on the left hand previously introduced into the parts, towards the right sacro-iliac symphysis. In proportion as it enters, the left hand, on which the blade is applied, must bring it, by a spiral movement, from below upward, to the situation it is definitively to occupy, behind the right cotyloid cavity. During this time, the right hand, changing gradually its situation and grasping the branch above, depresses the handle of the instrument towards the left thigh of the female. The mortise branch having been applied the second on the pivot branch, the articulation is easy, for there is no crossing. The articulation should always be made with great caution, and not in a hurried manner; as soon as it is accomplished, a rotatory movement* from left to right should be

* When the head is in the diagonal position, and the use of the forceps is indicated, it is of essential moment to bear in mind the direction of Dr. Chailly as to the rotatory movement to be effected on it. Indeed, if direct traction were made as soon as the instrument is applied, without previously changing the position of the head, it would not only be physically impossible to extract it (for, occupying as it does the diagonal position, its disproportion to the dimensions of the pelvis renders its delivery a thing out of the question), but the soft parts of the mother would be more or less lacerated, and the severe pressure exerted on the head by the unavailing efforts of the accoucheur would most probably sacrifice the child. It occasionally occurs that labour proceeds auspiciously, and there is no difficulty until the head has descended into the pelvic cavity; here, in consequence of some impediment to the movement of rotation, the head becomes arrested; and, notwithstanding the strong expulsive efforts of the womb, there is no progress in the delivery. The strength of the mother becomes exhausted, and the undue pressure on the soft parts may result in recto or vesicovaginal fistulæ, in severe inflammation of the vagina, &c., &c., to say nothing of the almost certain death of the child, should the cause of the difficulty escape the attention of the accoucheur. If, therefore, a case of this kind should present itself, and after delaying a reasonable time for nature to overcome the difficulty, should she fail, the accoucheur should proceed at once to instrumental delivery. Do not wait until the child is sacrificed, and the soft parts of the mother seriously injured; but as soon as nature has declared her incompetence to afford the necessary relief, let the accoucheur demonstrate that, in the hour of need, he can act as nature's substitute, and rescue both mother and child from

gently imparted to the instrument, in order to bring simultaneously under the pubes the occiput and the concavity of the borders of the instrument, and the head is then disengaged in the occipito-pubic position.

(Fig. 129.)



Exceptions.—Two exceptions may be noted in this case. It may happen that, in introducing the pivot branch first, which is the most easy to apply, because it is posteriorly, we may render more difficult the spiral movement which the second branch should execute, in order to place itself in front and to the right. It must be remembered that the branch which is to be in front is much more difficult to place than that which is to be posterior.

It may also occur that this difficulty will be experienced even in commencing with the branch which is to be above. In this case, it will sometimes be found more easy to pass this branch directly to the point which it is ultimately to occupy. Should this attempt prove useless, we shall then be compelled to withdraw the pivot branch, which has been introduced first posteriorly and to the left,

their perils. To do this, however, requires a profound knowledge, an intimate acquaintance with the principles of his art.

February 23d, 1842, I was requested by a gentleman of this city to hasten to his house, to meet his family physician, Dr. Andreas, in consultation. This gentleman's wife had been in severe labour for thirty hours, and had received from the doctor every mark of kindness and attention. Her pains had been severe; and at the commencement of labour the mouth of the womb dilated, the head began to descend, and there was reason to believe (as the doctor informed me) that the delivery would soon be completed. When, however, the head reached the pelvic cavity, it became arrested there, although there was no diminution in the pains, or in the force of uterine contraction. The lady, naturally of a delicate constitution, suffered severely from the constant action of the womb, and her strength began to fail her. On making an examination per vaginam, I found the head occupying the cavity diagonally; there was much heat in the vagina, and the scalp somewhat corrugated. Immediate delivery was indicated; for it was evident that nature had been foiled in rotating the head, and the exhausted condition of the mother, together with the hazard incurred by the child, evidently pointed out the indication to be fulfilled. The doctor concurred in this view, and, at his request, I introduced the forceps. As soon as the instrument was articulated, I brought the occiput under the pubes by rotating the head, and delivered the lady of a living daughter; a circumstance which, although unexpected, was welcomed with all that warmth of love which only a mother can exhibit.

At this period puerperal fever prevailed to an alarming extent in this city; and this lady, on the second day after delivery, was attacked with it; she was dangerously ill, but recovered. She and her little daughter are now in excellent health.—Ep.

in order that more space may be gained in the cavity to place the mortise branch first in front and to the right.

But then, the pivot branch being applied the second will be found above the mortise branch, and it will be necessary to cross the branches in order to articulate them; that is, to pass under the mortise the pivot branch, which is above it; unless, however, we are enabled to introduce the pivot branch under the mortise branch, which is rarely possible, on account of the resistance of the perineum.

Madame Lachapelle establishes the general rule, that the branch which is to be in front of the pelvis should always be introduced first, because it is the most difficult. This precept, excellent in itself, has, however, the inconvenience of rendering it necessary to cross the branches in all cases in which the part to be brought under the pubes corresponds to the left anterior fourth of the pelvis. Moreover, this procedure, to which we are seldom obliged to have recourse, differs from the general rule I have given (to introduce the pivot branch first) only where the occiput or forehead corresponds to the left and front of the pelvis; with this exception, there is perfect agreement between the general precepts of this celebrated sage-femme and myself, in all cases in which the part to be brought under the pubes corresponds to the right anterior fourth of the pelvis. In this case, also, when the introduction of the forceps has stimulated the uterine contractions, or when art has been obliged to interfere for some irregularity in the movement of rotation, or for any other accident, without inertia uteri, Madame Lachapelle has recommended, in order to protect the perineum, to withdraw the instrument after the rotation has been completed, and to commit the expulsion of the head to the spontaneous efforts of nature.

This suggestion is excellent where the head, badly seized, presents at the vulva with unfavourable diameters; but it is without value when the head is grasped in its bi-parietal diameter. In a word, if the perineum have such little power of resistance as to rupture when the head is regularly seized, and notwithstanding the precautions I have already indicated, it would also rupture with equal facility if the head were expelled naturally. The recommendation of Madame Lachapelle is also attended with inconvenience to the accoucheur. Thus, suppose, for example, that after the forceps is withdrawn, and the rotation of the head shall have been completed, the contractions should cease or become insufficient (which will often happen under these circumstances), it will become necessary to reapply the instrument, in order to extract the fœtus.

This second operation may give rise to suspicion in the minds of the assistants, not always competent to judge rightly of these matters, that the first failed, and may induce them to speak disparagingly of the accoucheur.

It therefore appears to me, in view of these facts, much more proper, in this case, to increase our vigilance and usual caution, rather than withdraw the forceps.

However, if there should be strong uterine contraction, on which we might calculate with certainty, we might, although the head was properly seized, remove the instrument, and confide the expulsion to nature. In withdrawing the branches, they must be made to pursue the same route as when introduced.

Operation in the Right Posterior Occipito-iliac Position.

The application of the forceps is exactly the same as in the preceding case, although the position is precisely the reverse. The occiput being posteriorly and to the right, cannot be brought in front, which, however, occurs in spontaneous expulsion; but it is the forehead which, being to the left and in front, is to be conducted under the pubes.

The curvature of the borders of the instrument should, therefore, be directed to the left and in front, &c. The forehead is to be brought under the pubes by the same movement of rotation that served to place the occiput there in the preceding case. Finally, the head must be disengaged, as in the occipito-posterior position, that is to say, by making traction at first upward, and then slightly downward, in order to bring the forehead and face from under the pubes. So far, in the application of the forceps, it will be seen that, in order to extract the fœtus, I have imitated, artificially, the process which nature employs to expel it. Here commences the first exception, for the means which I have at my disposition, in the present case, are insufficient to reproduce exactly the natural mechanism.

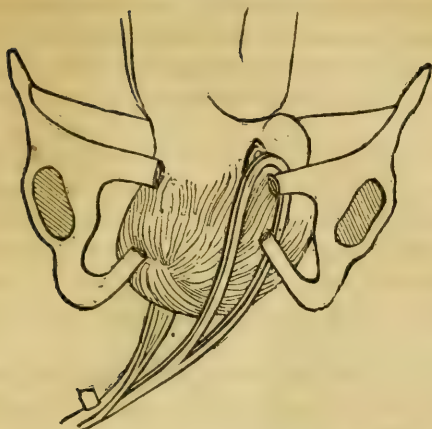
In a word, in the spontaneous expulsion, the occiput leaves the right sacro-iliac symphysis, and passes in front by means of an extended rotatory movement, in which the trunk participates almost entirely. Now, if I endeavour, by means of the forceps, to accomplish the same object, I would contort the neck in most cases, because the trunk, held by the retraction of the uterus, would not follow the rotation of the head, and this torsion, exceeding the fourth of a circle, would compromise the infant's life. Again, to bring the occiput forward by causing it to traverse the entire right lateral wall of the pelvis, it would be necessary, at the time of applying the forceps, in order to seize the head in its bi-parietal diameter, to direct the curvature of the instrument posteriorly, which is impossible; or to embrace the head very irregularly, by placing one branch under the pubes, the other in the cavity of the sacrum, which is scarcely ever practicable, even in the cavity (see *Transverse Positions*), and which would also be attended with inconvenience to the mother.

The disengagement in the occipito-posterior position being much more natural, easy, and advantageous to the child, we should depart from the rules traced out by nature, and carry the occiput posteriorly; we do this in bringing under the pubes the forehead, which is to the left and in front.

Operation in the Right Anterior Occipito-iliac Position.

The occiput is to the right and in front, behind the right coty-

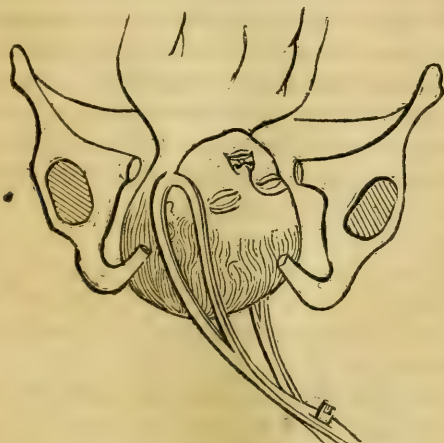
(Fig. 130.)



loid cavity; the forehead is posteriorly and to the left, on the left sacro-iliac symphysis; the occiput, in this case, must be brought in front. We should, therefore, direct the curvature of the borders of the instrument towards the occiput, that is, to the right and in front, and the pivot branch should be grasped with the left hand, and introduced on the left sacro-iliac symphysis, and then brought, by a spiral movement, above and to the left, behind the left cotyloid cavity; the mortise branch, held with the right hand, is introduced to the right and posteriorly on the sacro-iliac articulation, and remains there. The mortise being placed on the pivot, there is no crossing; the movement of rotation will be from right to left, &c.

Hence Madame Lachapelle's rule is followed: to apply first the branch which is to be placed above.

(Fig. 131.)



Operation in the Left Posterior Occipito-iliac Position.

In this position, which is the reverse of the preceding, the forehead corresponds to the right cotyloid cavity, and the occiput to the left sacro-iliac symphysis. The application of the forceps will be the same as in the preceding case; the movement of rotation,

also, will be accomplished in the same manner, from right to left, only the forehead is brought under the pubes instead of the occiput, which passes to the concavity of the sacrum.

(Fig. 132.)



But the disengagement of the head varies, as in all cases in which the occiput is posteriorly; elevate, in the first place, in order to disengage the occiput, then depress to bring the forehead and face under the pubes.

Operation in the Left Transverse Occipito-iliac Position.

In this position, one of the sides of the head is in exact relation with the posterior portion of the symphysis pubis, the other side regards the sacrum; the occiput corresponds to the left of the pelvis, the forehead to the right. Which portion of the head should be brought under the pubes? Is it the occiput or forehead? These two parts are at equal distances from the symphysis pubis; and whether the forehead or occiput be placed under the pubes, the movement of rotation will be as extensive in one case as in the other; but the occipito-anterior disengagement being easier, and more favourable for both mother and child, as we have the choice, we should certainly bring the occiput under the pubes.

(Fig. 133.)



The occiput corresponds to the left of the pelvis; the concavity of the borders must be directed to the left of the mother. Then, in disarticulating the instrument, the accoucheur will perceive that the mortise branch is above, and the pivot branch below. Now, in order to seize the head in its bi-parietal diameter, one of the blades, that of the mortise branch, must be placed under the pubes, while the other is introduced in the concavity of the sacrum.

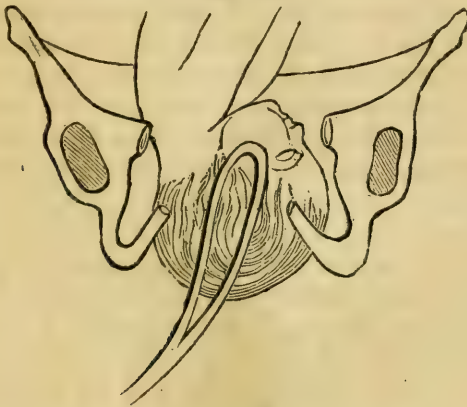
The pivot branch, therefore, is taken with the left hand and carried directly to the concavity of the sacrum; so far, the operation is extremely easy. Then the mortise branch, held with the right hand, is at first introduced to the right, in the direction of the sacro-iliac symphysis of this side, and brought gradually, by a very extended spiral movement, directly under the pubes. This second part of the operation is extremely difficult to perform; it is often impossible to place this mortise branch under the pubes, no matter what plan may be adopted, whether by a spiral movement, or by attempts to introduce it directly under the pubes.

If, however, we should succeed in embracing the head in its bi-parietal diameter, as soon as the forceps is articulated, we should rotate the head from left to right, by which means the occiput will be brought under the pubes; then we proceed with the extraction.

Operation in the Right Transverse Occipito-iliac Position.

In this position, the opposite of the preceding, the occiput corresponds to the right of the pelvis; the concavity of the borders will be directed to the right; the pivot branch, introduced on the left sacro-sciatic ligament, is brought under the pubes; the mortise branch is placed immediately in the concavity of the sacrum; the movement of rotation will be from right to left.

(Fig. 134.)



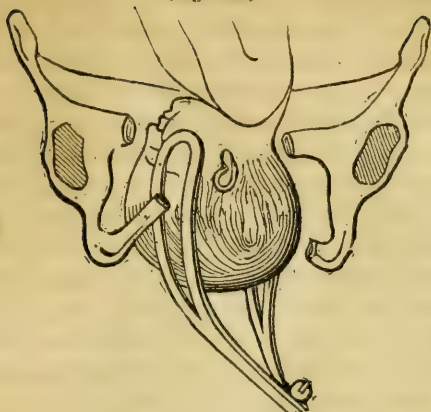
Exceptions.—The application of the forceps in these positions can scarcely ever be made regularly, even when the head has descended low in the pelvic cavity; and, as I have just remarked, this difficulty depends on the introduction of the branch which should be under the pubes. It is so embarrassing that, in the majority of cases, it cannot be accomplished. Two circumstances may then arise:

1st. If this anterior branch can be brought only behind one of the cotyloid cavities, as in the diagonal positions, it will not correspond with the other branch, which has been placed directly in the concavity of the sacrum; therefore, to make them parallel, this posterior branch must be reduced to a diagonal position. Suppose that, in this case, the head should be placed in the left transverse occipito-iliac position, the mortise branch being behind the right cotyloid cavity, it will be necessary to bring to the left sacro-iliac symphysis the pivot branch, which is posteriorly, otherwise the instrument could not be articulated. The head, although transverse, will then be seized as if it were diagonal, the mortise branch corresponding to one of the sides of the os frontis, and the pivot to the opposite lambdoidal suture; the head is embraced in the forceps from one frontal protuberance to the opposite occipital protuberance (fig. 135), and by a diameter less favourable to the delivery than the bi-parietal diameter. However, in most cases, the disengagement will be accomplished. In a word, one of two things may take place: either the head may turn in the instrument at the time of its articulation, and, from being transverse, become diagonal, and then the delivery will be as easy as in a diagonal position; or it remains transverse (fig. 135), while the forceps can only be applied diagonally. Then, after having articulated the branches, a movement of rotation is imparted to the forceps, which brings the concavity of the borders of the instrument under the pubes, but only places the occiput behind the left cotyloid cavity. It is rare, however, for the disengagement of the head to take place in the diagonal position; for this purpose, the rotation of the occiput must be complete; it must, therefore, be accomplished. For this, the accoucheur increases the rotation of the forceps, in order to complete that of the head; that is, he directs the concavity of the borders of the instrument to the right. If the perineum should offer much resistance, and there be energetic uterine contractions on which we may rely, it will be prudent to withdraw the instrument, if the head have nothing to overcome but the resistance of the external parts. If, in this same case, there should be no uterine effort, after having brought the occiput under the pubes by an exaggerated movement of rotation, the branches should be disarticulated, in order that they may be withdrawn and reapplied on the sides of the head; or, after separating, but without withdrawing them, they may be placed in this situation by depressing one, and elevating the other.

2d. Finally, it may happen, in the transverse positions, as it often does in the diagonal, that it is not possible to place the forceps diagonally; and that the instrument can only be applied as if the head were in the antero-posterior position, one branch to the left, the other to the right. It will be evident that, in this case, the head being transverse, it will be seized from the forehead to the occiput (fig. 136).

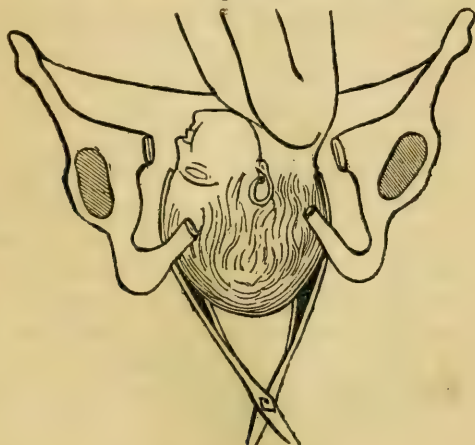
In order, then, to bring the occiput under the pubes, we should direct the concavity of the borders of the instrument to the right, in the left transverse occipito-iliac position, and to the left in the oppo-

(Fig. 135.)



site position ; then, if there be contractions, the instrument should be withdrawn, and the expulsion confided to nature ; for, in this case, it would be hazardous to disengage the head, having one branch under the pubes, and the other in the concavity of the sacrum. If there should be no contractions, we may reapply the forceps regularly on the sides of the pelvis, either by first withdrawing the instrument, or conducting the branches to this situation without removing them : this latter mode of procedure will often present difficulties, and the branches cannot be introduced with the same certainty. Finally, we should never extract the head, in this irregular application of the forceps, unless the parts should be very extensible, and the head small and reducible.

(Fig. 136.)



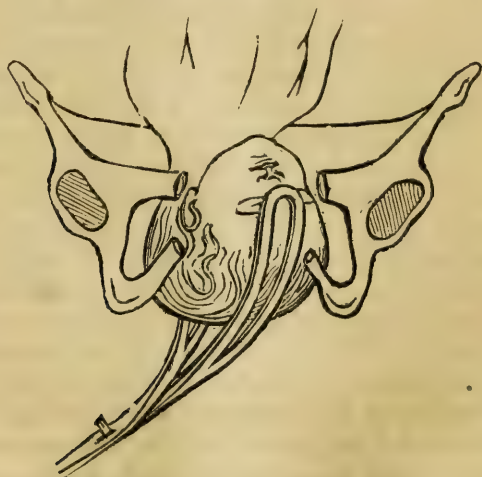
Particular Rules for the Application of the Forceps, the Head being in the Pelvic Cavity, and the Position unknown.

The accoucheur may be called to apply the forceps when the head, having remained for a long time in the cavity, has become the seat of a large sanguineous tumour, which conceals the characters of the position. Under these circumstances, auscultation

will prove of great value; for, if the summum of intensity of the pulsations of the fœtal heart should be heard directly in front, it will be either an occipito-pubic or an occipito-sacral position; and, in this case, the application of the forceps will be the same. If the summum of intensity be to the left, there will be every reason to believe that it is a left anterior occipito-iliac position, which is much more frequent than the left posterior; if to the right, it is more than probable that it is a right anterior occipito-iliac position, for this, after the descent of the head, is more frequent than the posterior position; the contrary, however, is observed at the superior strait. In a word, it will also, in some cases, be possible to ascertain more exactly the position, and to know whether the occiput is in front and to the left, posteriorly and to the left, in front and to the right, or posteriorly and to the right. I must admit, however, that this has always appeared to me very difficult; and I am of opinion that it will be impossible to distinguish, in most cases, the diagonal from the transverse positions.

If, therefore, the pulsations of the fœtal heart should be heard in front, the forceps must be applied in the direct position. If they should be heard to the left, without being able to determine whether the greatest intensity is in front or posteriorly, the forceps should be applied in the most frequent position, the left anterior occipito-iliac. Should the intensity be to the right, the instrument must be introduced in the right anterior occipito-iliac position, which is the most common after the descent of the head. But let us see what will be the consequence if the accoucheur should be led into error, not as to the right or left position, for this is scarcely possible; but if, on hearing the pulsations on one side, he should imagine it to be an anterior, while it is a posterior of the same side.

(Fig. 137.)



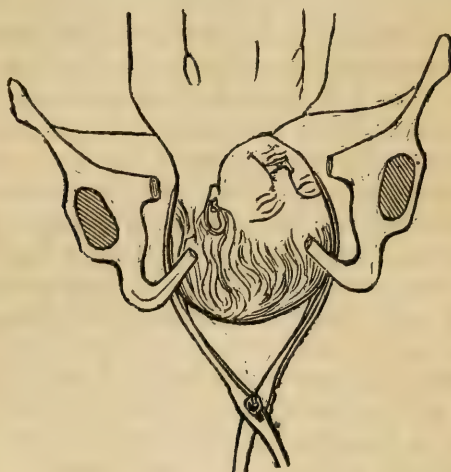
I will now suppose that the position is a right posterior occipito-iliac, and that it has been mistaken for a right anterior; the forceps will be applied as in a right anterior position, the curvature of the

borders of the instrument regarding the posterior surface of the right cotyloid cavity, the pivot branch in front and to the left, the mortise branch posteriorly and to the right. The head will be seized in its occipito-frontal diameter (fig. 137). If the head should be resisting and irreducible, the separation of the branches of the instrument will indicate to the operator that it is grasped in its unfavourable diameters, and will at once point out to him his error. He then proceeds as in cases in which the position is altogether unknown: he will apply one branch on the left, the other on the right, and will seek, by inclining the instrument either to the right or to the left, the direction most favourable for the delivery. (See, farther on, *Unknown Position*.) But if the head be reducible and small, the separation of the instrument will not take place, and the accoucheur will still be of the opinion that the head is in the right anterior occipito-iliac position, while, in fact, it is a right posterior occipito-iliac; he then believes it to be necessary to bring the occiput under the pubes, by a movement of rotation from right to left, which will place the concavity of the borders of the forceps under the pubic arcade, but which will bring the occiput only to the right extremity of the transverse diameter. The head not yielding to the direct tractions exerted upon it, the accoucheur continues the movement of rotation, by directing the concavity of the borders of the instrument towards the left cotyloid cavity. This movement will not suffice to complete the rotation of the head; it only brings the occiput behind the right cotyloid cavity; finally, the head still resisting the tractions, the operator inclines the concavity of the borders entirely to the left, and thus conducts the occiput under the pubis. He now perceives that the head yields readily to the force he employs; but as it would not be prudent to effect this disengagement with the present situation of the forceps, for fear of injury to the external organs, he withdraws the instrument, places it on the sides of the pelvis, and completes the extraction; should there be efficient uterine contraction, he commits the expulsion to the spontaneous efforts of nature.

It may also frequently occur, under these circumstances, that the branches cannot be adjusted, one in front and to the left, the other posteriorly and to the right (fig. 137), and that they turn on the sides of the pelvis (fig. 138); then the occiput will be more remote from the concavity of the borders of the forceps, and the rotation of the head cannot be accomplished with one application of the instrument only, as would be possible in the preceding case. The head will be seized by one occipital protuberance and the opposite frontal protuberance. The operator, still supposing that it is a right anterior sacro-iliac position, in order to bring the occiput under the pubis, rotates the forceps from right to left, which directs the concavity of the borders of the instrument towards the left cotyloid cavity, and brings the occiput in the transverse position; the head continuing to resist, he increases the rotation of the instrument, notwithstanding which, he can only bring the occiput behind the right cotyloid cavity, and he still feels that the head

does not yield. Finding that it is impossible to extract the head, and not being able to carry the rotation farther, since to do this it would be necessary to place the concavity of the borders in relation with the left sacro-iliac symphysis, which cannot be done, he withdraws the instrument, and again applies it on the sides of the pelvis. But the head, the rotation of which is not complete, still resists the tractions, and, in order to extract it, the accoucheur, in directing the concavity of the borders of the instrument either to the right (and in this case the result would be fruitless) or to the left (the only direction favourable to the disengagement), succeeds, ultimately, by repeated efforts, in delivering the head.

(Fig. 138.)



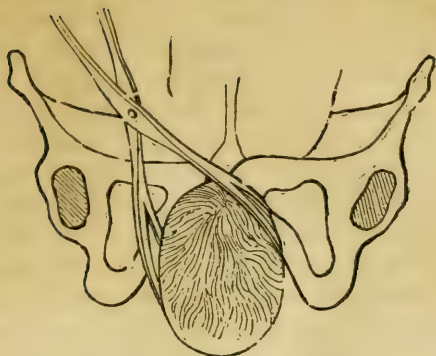
It is evident from these examples, more of which might be adduced, that auscultation, though of precious value, may, however, occasionally lead to error, and prove prejudicial to the life of the fœtus, in consequence of the torsion of its neck, which results from the extended movement of rotation the head undergoes, and which is contrary to the rules for the application of the forceps in presentations of the vertex. However, this is an error into which the most skilful practitioners may fall, and which, happily, does not always involve the safety of the fœtus. Madame Lachapelle cites instances in which children have survived this degree of torsion.

Auscultation, in cases of doubtful diagnosis, may, therefore, be of great value, but it will in some instances occasion error; so that if, after the use of the stethoscope, we should still be in doubt as to the position, it will be much better to pursue the course I shall now point out.

If the pulsations of the heart cannot be heard, either because the fœtus has ceased to live, or because the agitation of the mother renders auscultation impossible, and the position should be altogether unknown or doubtful, the accoucheur should apply the forceps on the sides of the pelvis.

Then, making slight tractions on the instrument, he will ascertain whether the head resists or yields to his efforts. If it yield to

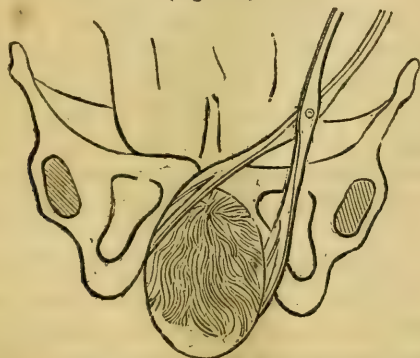
(Fig. 139.)



direct traction, it is because it has executed its movement of rotation; if it resist, he should then direct the concavity of the instrument to the right, the left occipito-iliac position being the most frequent; then he continues his tractions. If, indeed, it should be a left anterior occipito-iliac position, or a right posterior occipito-iliac, the application being the same in both cases, the head will yield to the efforts of the operator; moreover, he will soon perceive that his tractions are more availing, whether made above or below, according as the position is an occipito-anterior or an occipito-posterior, and the head will soon be disengaged in one or other of these two positions.

If these tractions, the concavity of the branches regarding the right side of the woman, produce no result, the accoucheur should conclude that he is deceived, and that it is a right anterior or left posterior occipito-iliac position; he then directs the concavity of the borders to the left, and immediately, in increasing more or less this movement of rotation, he perceives that the head yields to the tractions that he makes upon it; and he then elevates or depresses the instrument, according as the facility he experiences of effecting one or other of these movements indicates to him that it is an anterior-occipital or posterior-occipital position.

(Fig. 140.)



In a word, when the position is unknown, as the occiput or forehead, which should always be brought under the pubes in the presentation of the vertex, corresponds always in front either to the left

or to the right, it will be sufficient, in order to disengage the head, to employ at first direct tractions; and if resistance should offer, it will be necessary to direct the concavity of the instrument either to the right or to the left, by increasing more or less the rotation, according to the direction in which this rotation may appear most favourable to the extraction. But, in this case, it will be very important to employ only limited tractions; the perineum, too, should be carefully supported, and the accoucheur should be ready to delay the delivery of the head, rather than extract it; for if, after having resisted the direct tractions, the movement of rotation should have placed the head in a position more favourable to its expulsion, it may pass too suddenly from the maternal organs, and injure them to a greater or less extent. Finally, if the parts be very friable, and there be present strong uterine contractions, after having brought under the pubes the part which should be placed in front, the accoucheur should withdraw the forceps, and leave the delivery to nature. If there should be no contractions, the instrument must be reapplied on the bi-parietal diameter.

§ 5. *Application of the Forceps in the Presentation of the Vertex, when the Head is engaged in the Superior Strait.*

When the head is half engaged in the superior strait, the rules for the application of the forceps are precisely the same as when it has descended into the cavity. The operation, however, is more difficult and dangerous for both mother and child.* It should,

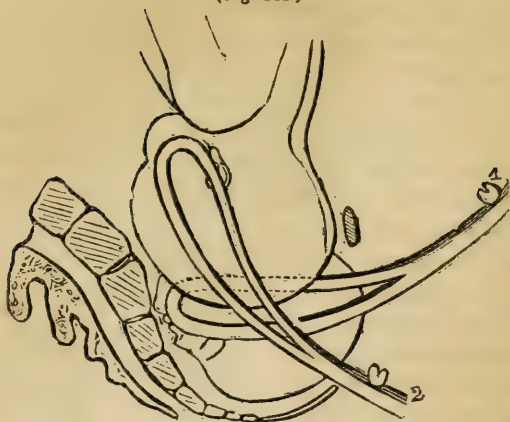
* Too much attention cannot be given to the opinion of Dr. Chailly in reference to the difficulty and danger of applying the forceps when the head is at the superior strait. I have already insisted on this point, and it is one of great practical interest. A short time since, I requested two of my students, Messrs. Guernsey and Blodgett, to attend one of my clinique patients who was in labour. This woman was twenty-four years of age, healthy and robust, and pregnant with her first child. She had been suffering more or less pain for two days before these gentlemen visited her; and, after the lapse of thirty-six hours from their first visit, Mr. Guernsey stated to me that, notwithstanding strong uterine contractions, there was no progress in the delivery, and that the friends were becoming impatient. He also remarked (I had not yet seen the patient) that she was strong and muscular, with a bounding pulse. I suggested to him to bleed her to the amount of xxij , and to inform me in the course of two hours whether any progress had been made. At this time I was sent for, and was accompanied with another pupil, Mr. De Courcy. When I arrived, the gentlemen in charge of the case remarked that the head was still at the upper strait, and they did not believe that the pains, although severe, had occasioned any progress in the delivery. On making a vaginal examination, I found their representations to be literally true: the mouth of the uterus was dilated, but the head, enormously large and resisting, had not begun to disengage. The occiput lay on the left acetabulum, and the anterior fontanelle on the opposite sacro-iliac symphysis, and the head was in a demi-flexed position. There was considerable heat about the vagina, and the scalp was evidently corrugated, manifesting that unusual pressure (all, however, unavailing) had been exerted on the head, and that the child was in more or less danger. The woman herself fervently supplicated that we should deliver her, her only anxiety being the safety of her child. It was no easy matter to decide upon the course to be adopted in this case; it was evident, however, that artificial delivery was indicated; but whether by version or the forceps was a question of some delicacy to determine. Under ordinary circumstances, there would have been no hesitation, for the head being at the superior strait, and artificial delivery becoming necessary, version would be preferable. But, in this instance, the head was unusually large, and turning would, of course, have been attended not only with great difficulty to the operator, but with serious results, most probably, to both mother and child. Add to this, that the uterus was contracting with great energy, and it will be seen that the question naturally arose, Which would afford the best chance to the mother and child, the forceps or turning? I decided on the former, and, in consequence of the peculiar circumstances of the case, departed, in this preference, from a rule which I hold to be almost universally proper: *to turn rather than attempt delivery by the forceps when the head is still at the superior strait.* Pro-

therefore, never be had recourse to, except where version is impracticable in consequence of the excessive ascent of the uterus (rare in presentation of the vertex), and when the pelvis is malformed or the size of the head is very large. Yet, if the pelvis be deformed in its oblique diameter (see fig. 70), version may be practised. The regular application of the branches at the superior strait is exceedingly difficult; indeed, it may be said to be impossible in most cases. To what is this difference attributable? In the application of the instrument when the head has descended into the cavity, it has to accommodate itself only to one axis. The application could be accomplished with a straight as well as with a curved forceps. At the superior strait, on the contrary, the instrument must penetrate the uterus, and adapt itself to the combined axes of the inferior and superior straits: consequently, it is necessary that it be curved on its borders, and that the concavity of the borders of the blades correspond with the posterior portion of the symphysis pubis, in order that the instrument may accommodate itself to the curvature of the pelvic canal. If this direction be departed from, it will be impossible to apply the instrument. The branch which should be posteriorly may possibly be introduced; but the one which is to be in front cannot be applied properly, and it will be found altogether impracticable to articulate the branches, which do not correspond with each other. The perineum, which still increases the curvature of the pelvis, opposes the handles of the instrument in passing backward, and, consequently, prevents the forceps, the concavity of whose borders regards one of the sides of the pelvis, from accommodating itself to the axis of the superior strait. In fine, to attempt to articulate a forceps the concavity of whose borders does not regard the posterior portion of the pubes when the head is at the superior strait, would be like endeavouring to pass an inflexible straight line through a crooked canal, which is impossible. The forceps thus applied leaves so little space between the blades, that the smallest head cannot be embraced between them.

In two positions only can the forceps be applied regularly at the superior strait, in taking the head by its bi-parietal diameter; the positions are those in which the occiput or forehead is at the symphysis pubis, because, the sides of the head corresponding with the sides of the pelvis, the branches will be placed on the sides of the pelvis and head, and their concavity will be in front. Unfortunately, these positions are very rare, if even they exist at all; while the diagonal positions, in which it is not possible to seize the head regularly by its bi-parietal diameter, since to do this the concavity of the borders of the instrument should regard one of the sides of

ceeding with great caution, and after some little difficulty, I succeeded in adjusting the blades of the instrument, but found it utterly impossible to approximate the handles of the forceps, in consequence of the great size of the head. I carefully held the handles, guarding against the possibility of the blades slipping, and commenced my tractions downward and backward (loosening, but not withdrawing the instrument during the intervals of pain), and succeeded, in about twenty minutes, in delivering the patient of an enormous living child. The head of this infant was excessively large, and the dimensions of the body were proportionate.—ED.

(Fig. 141.)



the pelvis, are the most frequent. In fine, the forceps can scarcely ever be applied regularly when the head is at the superior strait. Whatever the position of the head may be at this strait, the pivot branch should be placed on the left, and the mortise branch on the right, without regard to the position. This has been called the German method. It is seen now that, in the diagonal positions, the head must be seized by one frontal prominence, and the opposite occipital protuberance; that, in the transverse positions, it is seized from the forehead to the occiput; it may even be said that such is the rule, and that those cases in which the forceps can be applied regularly constitute the exceptions.

It must be understood, moreover, that the application of the forceps will be the less regular as the head is more elevated.

The more the head is elevated, the more necessary it will be to observe the precautions I have already mentioned in reference to the orifice. Thus, it is essential that the branches be safely guided within the orifice on the extremity of the fingers of the other hand.

The branches should be introduced in the direction of the two axes, in order to penetrate the uterus. They should be applied with great gentleness, and no violence should be used to overcome any obstacle that may oppose their adjustment.

It is especially here that the precept of which I spoke a short time since will find a useful application.

After having introduced one branch, in order to be certain that it is well applied, we should endeavour to carry it a little farther; and if it meet with no obstacle, this will indicate that it has entered the uterus. In attempting to withdraw it, also, there should be resistance, which is determined by the head. If an obstacle be encountered which prevents the farther introduction of the branches, it is because the branches have not penetrated the uterus, but are imbedded in the cul-de-sac of the vagina. They must then be withdrawn, in order that they may be carried within the uterine orifice. However, notwithstanding one branch may have entered the uterus, the presence of some portion of the foetus may present an impediment to its farther ingress. In this case, after having well

ascertained, with the extremity of the finger, that the end of the blade passes into the uterus, we should endeavour to overcome the obstacle by varying the direction of the extremity of the blade, and endeavouring to remove the impediment by gentle efforts. But we should never push the instrument violently, especially if we have any doubt as to the proper situation of the blade. If, in fact, the obstacle were due to the cul-de-sac of the vagina, it could not resist this violence, and, consequently, the extremity of the blade would penetrate the peritoneum.

The blades should be introduced higher in proportion as the head is more elevated, so that this latter may be embraced by them. After the head has been once seized, the two handles, grasped with the hand corresponding to them, should be approximated so that the mortise may be over the pivot. If these two points of articulation do not correspond exactly, the handles should be gently moved in an opposite direction, and should then be strongly bound by a napkin.* The tractions must be made in the axis of the superior strait, that is, downward, as much as the perineum will sanction; it is on this account that it is important, in this application of the instrument, to place the patient on the border of a solid bed, which is sufficiently elevated. If the bed, on the contrary, should be low, the accoucheur cannot use much force, and will encounter great fatigue. From time to time he must cease his efforts, and ascertain, with the finger introduced between the two blades, whether the head passes down with the forceps, or whether the forceps descends alone. If the instrument should lose its hold, it must be withdrawn, and again introduced more deeply, and the handles should be still more firmly bound.

The accoucheur must be careful never to abandon himself to the forceps; and when very energetic tractions are required, whatever force he may employ, he should always be ready to arrest the delivery of the head, if it should threaten to be too rapid. A neglect of this precaution has sometimes subjected accoucheurs to ridicule; they have abandoned themselves to the instrument, have

* I am aware that it is generally recommended to place a cord or folded napkin around the handles of the forceps, after the blades are adjusted, and before the accoucheur commences his tractions. But I regard this as bad practice in most cases, and, in my opinion, it should be dispensed with. In the first place, when the handles are approximated, the accoucheur can retain them in situ without the aid of the band; and, secondly, if they cannot be brought in contact in consequence of the large size of the head, to apply a bandage under these circumstances would almost certainly ensure the child's death, for the forced pressure employed could not but result prejudicially. I am well satisfied that the infant is often sacrificed by the long-continued pressure made on its head after the application of the instrument; and to avoid this, I always pursue the following method, which I am in the habit of recommending to my class, and to which I attach great value: As soon as the instrument is properly applied, and the patient has a labour-pain (for, as a general rule, the tractions are to be employed *only during the pains*), I then commence extracting, with the particular kind of force already indicated in a previous note, and when the pain ceases, of course my efforts cease, and at the same time *I cautiously loosen the lock of the instrument, still retaining it on the head*; thus, during the period when I cannot make tractions, relieving the head of the fœtus from all undue pressure. As soon as the pain recommences, the instrument is again cautiously locked, and the tractions proceeded with. Every practitioner knows that occasionally it requires great effort and some considerable time to achieve delivery with the forceps. To exert, therefore, constant, and frequently severe pressure on the head during the whole of this period, must inevitably prove serious, if not fatal to the infant.—Ed.

(Fig. 142.)



thought of nothing but the forceps, and this latter suddenly losing its hold, they have fallen backward with only the forceps in their hands.

In proportion as the head descends in the cavity, the handles of the instrument must be raised, and the tractions made in the axis of the inferior strait. But the head, which has been seized from one frontal protuberance to the opposite occipital protuberance in the diagonal positions, and from the forehead to the occiput in the transverse positions, cannot pass the inferior strait, in presenting these unfavourable diameters, as if it had been regularly seized. The concavity, therefore, of the borders of the instrument must be directed to the right side, if that portion of the head which we wish to bring in front be to the left, and *vice versâ*. In this way the rotation of the head is accomplished. If the parts are very extensible, we may deliver, although the head should be grasped in its unfavourable diameters, and the concavity of the borders of the forceps regards one of the sides of the pelvis, instead of being placed under the symphysis pubis. But we should be careful how we extract the head, the instrument being placed in this manner; if the genital organs be narrow, friable, and inelastic, we should, if there be no uterine contractions, place the branches on the sides of the head, either by withdrawing for the purpose of reintroducing them, or by sliding them on the sides of the pelvis, without removing them, but, well understood, they must have been previously disarticulated. If, in this case, the uterus should contract with energy, we withdraw the instrument, and confide the expulsion of the head to nature.

Same Application of the Forceps, but the Position being unknown.

It sometimes happens that the prolonged sojourn of the head at the superior strait occasions on the scalp a sero-sanguineous tumour, which conceals the characters of the position. This circum

stance modifies in no respect the application of the forceps, since one branch must be to the left, and the other to the right, no matter what the position; but it leaves the accoucheur in doubt at the moment he attempts to disengage the head, after it has arrived in the cavity. With a view to render the disengagement more easy, on which side should the movement of rotation be made? on which side, in a word, should the concavity of the borders of the instrument be directed? It is impossible to know.

We should, therefore, as I have already remarked, the forehead and occiput always regarding one of the two anterior fourths of the pelvis, pass the concavity of the borders, at first to the right, and if the head should not appear to yield, then to the left. In acting thus, we shall not fail to discover the most favourable direction for the disengagement.

§ 6. *Operation when the Head is movable above the Superior Strait.*

The operation is precisely the same in this case as in the preceding, except the difficulties are much greater. Moreover, the mother and child incur much more serious hazard. We should not have recourse to the forceps, in this case, unless version is impossible. This impossibility could only be in consequence of a disproportion between the head and pelvis. If, therefore, the head should be *excessively* large, or the pelvis much contracted, it will be necessary to use the perforator.* (See article *Deformities of the Pelvis*.)

The height of the head, as in the preceding case, renders the regular application impossible; and this height, which is still more considerable, occasions great difficulty in guiding the branches with the extremity of the fingers, which are impeded in attempting to reach this elevation. Again, the mobility of the head exposes to three kinds of inconvenience, which were not met with in the preceding application: 1st. The branch first applied moves the head to the opposite side by acting on it as a lever, and there is no room to introduce the other branch between the edge of the superior strait and the head; its extremity strikes against the head. Add to this, that frequently the assistant, who holds the handle of the branch first applied (pivot branch), increases the difficulty by approximating the handle to the left thigh, which circumstance augments the effort which the blades make on the head. This inconvenience may be remedied by fixing the head at the superior strait, with the hands of an assistant applied firmly on the hypogastrium, and in taking care that the handle of the pivot branch is drawn towards the right thigh by the aid to whom it is confided. 2d. On account of this mobility, the head is pushed before the instrument, and can only be seized by the extremity of the forceps, or merely by one of its borders; so that, during the very first tractions, it slips between the blades. This may occur in two different

* Let not the pupil thoughtlessly decide on the use of this instrument of death. He must be fully satisfied of his inability to deliver with the forceps, or by version, before he resorts to this fatal extreme.—Ed.

ways: when the head is grasped by the extremities of the blades only, it escapes from below upward (fig. 143); when it is grasped by one of the borders of the instrument, which is common in all cases in which the pelvis is deformed, on account of the very marked ante-version of the uterus, it escapes horizontally from the blades, and rests on the pubes (fig. 144).

This difficulty will be overcome by causing an assistant to maintain the head at the superior strait, and reducing, as far as possible the ante-version.

(Fig. 143.)



(Fig. 144.)



The dangers of this application will be avoided, the head being movable, by introducing the fingers as high as practicable, in order to guide the extremity of the blade within the orifice. Our vigilance and caution must be increased; the tractions should be slow and guarded, and we should always be prepared to desist if the instrument should loose its hold, in order that we may prevent the unpleasant consequences of a violent extraction of the forceps.

Circumstances which exclude the use of the Forceps when the Head is arrested at the Superior Strait.

It will have been seen, from what I have so far said respecting the presentation of the vertex, that a deformity of the pelvis, or an increase in the diameters of the head (but not an *excessive* size), the descent of some other part, whether fœtal or maternal, with the head, when the uterus is retracted on the fœtus, are the only circumstances which require the application of the forceps in this presentation. when the head is at the superior strait. In order to overcome all the other accidents, version should be preferred. It scarcely ever happens, when the vertex presents in a well-formed pelvis, and the head possesses its normal dimensions, that the uterine retraction is such as to oppose the introduction of the hand; for if this violent retraction existed, it could only occur after energetic efforts of the womb, which would certainly cause the head

to descend into the cavity, whatever might be its position, and then, instead of version, the forceps would be indicated. It may, however, be urged, that a very inclined variety of presentation may prevent the descent of the head, notwithstanding strong and energetic contractions; and that, in this case, the retraction of the uterus might be such as to prevent the introduction of the hand. But these forced inclinations are extremely rare; and, in most cases, I am satisfied that nature can overcome them. It is only, therefore, a disproportion between the head and pelvis that renders the application of the forceps necessary above the superior strait.

However, in this case, even, the application of the forceps has certain limits, beyond which it would be useless, and positively dangerous for both mother and child. The pelvis should not be too much contracted, nor too regular in its deformity; nor should the head be of an *excessive* volume, as, for example, in hydrocephalus, the only case in which we can appreciate the size of the head before birth.

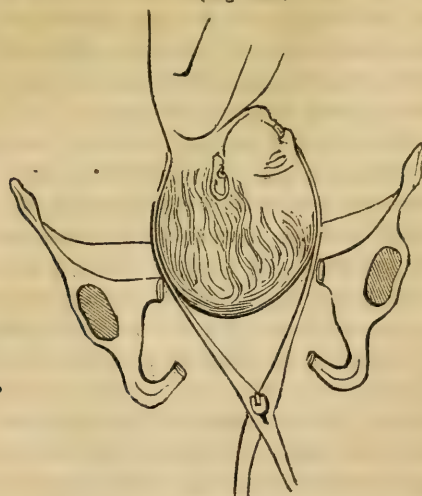
Baudelocque (vol. ii., p. 22) has fixed an extreme limit beyond which this instrument cannot be employed with safety to the mother: this limit is three inches. He has also made some experiments as to the degree of reduction which the head can undergo, and as to the effects of this reduction on the life of the fœtus and the organs of the mother; I shall draw some practical deductions from these experiments, taking the liberty, however, of adding a few observations, which I think important, and which have been omitted by this celebrated accoucheur.

The forceps is merely an instrument of traction; it cannot reduce the volume of the head sufficiently to allow it to pass through a pelvis of less than three inches; moreover, I am well satisfied that the compression caused by this instrument, even admitting that it does not slightly increase the diameter perpendicular to that on which it acts, never exerts any influence on the diameter opposing the disengagement, but on that which crosses it. In fact, in the case before us, it is easy to appreciate the unfavourableness of this circumstance. Thus, in a contraction of the antero-posterior diameter of the superior strait, which is the most common, the head is placed transversely, its bi-parietal diameter being in relation with the antero-posterior diameter, while the occipito-frontal corresponds with the bis-iliac or transverse diameter. And as the forceps can only be applied on the sides of the pelvis, it seizes the head from the forehead to the occiput (fig. 145), diminishes the occipito-frontal diameter, which does not require it, and increases the bi-parietal, which really stands most in need of diminution;* and the forceps acts, in this case, evidently as an instrument of traction,

* Baudelocque supposes that, in applying the forceps above the superior strait, the head may be seized by its bi-parietal diameter, in which he is universally followed, without thinking that, on account of the transverse position assumed by the head at the contracted superior strait, to take it by its bi-parietal diameter, we must apply one blade under the pubes and the other on the sacro-vertebral angle, which cannot be done in a pelvis well formed at the superior strait, and still less when the pelvis is deformed. In order that the head may be seized in this case regularly, the forceps should be applied antero-posteriorly, and all practitioners know the rarity of this position, particularly in a contracted pelvis.

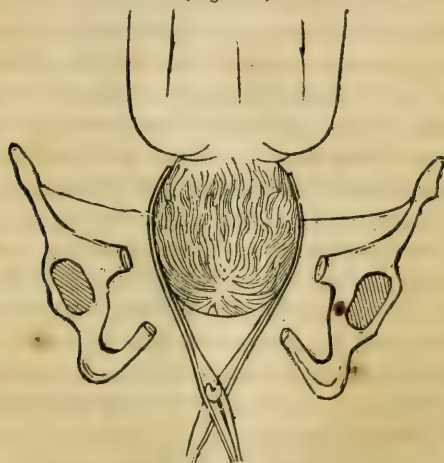
and not by determining a reduction favourable to the disengagement, since it would be more capable of augmenting than diminishing the bi-parietal diameter."

(Fig. 145.)



Supposing that, in an antero-posterior position of the head (which is rare), no matter whether this position be spontaneous or be produced by the application of the forceps, the instrument could act on the bi-parietal diameter, this diameter has no occasion for reduction; indeed, it can present no obstacle to the descent, for it is no longer in relation with the contracted antero-posterior diameter, but with the bis-iliac. The occipito-frontal diameter, therefore, would now be in need of reduction, since it is in relation with the smallest diameter of the pelvis.

(Fig. 146.)



I have just demonstrated that the compression of the head scarcely ever determines its reduction in a sense favourable to the disengagement; and experience shows that it is difficult for this compression to exceed four or five lines without destroying the fœtus.

and often endangering more or less the life of the mother. In a word, the violent tractions necessary to be made upon the head in order to cause its descent into a pelvis of less than three inches, bruise and lacerate the soft parts which line the pelvic cavity; and the mother often falls a victim to this violence, while the child, already destroyed, cannot be extracted. If, therefore, this reduction be necessary in order to deliver the fœtus, and as the reduction must sacrifice it, and involve the safety of the mother, it appears to me far more rational, after having ascertained the capacity of the pelvis, and delayed a necessary time, according to the strength of the patient, twelve or eighteen hours, during which the energetic contractions of the womb have been unable to effect the descent; it would, I repeat, be more rational to diminish the volume of the head by the perforator or cephalotribe, and thus save the mother, since the child must inevitably perish. We may have recourse to these means with the less scruple, because, in most cases, the child has been sacrificed before we attempt the operation.

Authors, it is true, report cases of spontaneous delivery where the pelvis has measured less than three inches; but such records, which are not extremely rare, tend only to prove the infinite resources of nature, but do not in any way fortify those who recommend the extraction with the forceps of the head at full term, when the pelvis is less than three inches.

In fine, because the expulsive and long-continued efforts of the uterus may, in one, two, or three days, cause the delivery of the head, when the superior strait measures not quite three inches, is this any justification for the accoucheur to attempt the accomplishment of the same thing by instruments? Certainly not. In the first case, if children have been expelled alive, it is because the compression resulting from the contractions of the womb is gentle, gradual, and continuous, and is not followed by the same unhappy consequences as when it is sudden and rapid, which is more or less the case with the compression produced by the violent efforts of the accoucheur, and which always destroys the infant.

And, moreover, what object can there be in applying the forceps, when it must sacrifice the child, and seriously endanger the life of the mother, and which, in most cases, proves entirely useless?

There would be an apology for adopting this course only in cases in which the deformity of the pelvis cannot be readily ascertained, and which certainly would not be admissible when the contraction is so well marked; and in cases, also, in which a slighter contraction coexists with an excessively large head, a circumstance, except in hydrocephalus, which it is not possible to appreciate; but, in consequence of the great effort necessary to make,* and the insufficiency of the uterine contractions to effect the passage, we should have

* In no case can we appreciate, by the approximation of the handles of the instrument, the degree of compression exercised on the head; for if the forceps be badly tempered, the handles may touch, although the blades are not approximated in the same proportion. This reduction is also very limited and very variable; it depends, in fact, on the solidity of the bones and sutures, and the manner in which the head is seized.

reason to suspect that the obstacle is due to the large size of the head, which it is not possible to reduce, except with the perforator or cephalotribe.

§ 7. *Accidents which may follow the Application of the Forceps.*

The accidents which may depend on the use of the forceps may be in consequence of its application, although the instrument be directed by a skilful hand, or they may result from the inexperience of the operator.

In the first class are embraced contusions of the soft parts which line the margin of the superior strait, laceration of the perineum, and death of the fœtus, whether produced by compression of the brain or umbilical cord. In the application of the forceps above the superior strait, there will be procidentia of the cord at least two out of five times.

In the second class are embraced contusions and lacerations of the neck of the uterus, which, in general, are not very serious; perforations of the cul-de-sac of the vagina by the extremity of the blade pushed with too much violence, or badly introduced; accidents which are of the most formidable character, because the instrument penetrates the peritoneal cavity; contusions of the margin of the superior strait in cases in which the application of the forceps should not have been attempted. Laceration of the perineum, sphincter ani, and of a portion of the rectum; all of which are more or less grave, and to which I shall hereafter allude.

As, to vesico, urethro, and recto vaginal fistulæ,* which have been so often ascribed to the forceps, I cannot regard them as being ordinary consequences of the application of this instrument, even when this application has not been without blame. In truth, these accidents are much more frequently observed after spontaneous deliveries than as the results of artificial interference. They are occasioned by the prolonged sojourn of the head at the superior strait, by the pressure exerted by the head on the parts which are first contused, and then fall into gangrene. When they occur after the use of the forceps, we should attribute them rather to the pressure which the head has exerted on the parts for a long time previous to the operation, than to any injury from the tractions made with the instrument, or to any improper direction given to the blades at the moment of their introduction.

ART. II.—TURNING.

Turning is an operation by which the accoucheur proposes to bring down to the superior strait one of the two extremities of the fœtus—the head or pelvic extremity. Hence there are two species of turning: *cephalic turning* and *pelvic turning*.

* These fistulæ are common consequences resulting from the too frequent use of the crotchet. I am now attending a poor creature, who has entailed upon her the most distressing disease, not only from the unskilful, but, I am sorry to say, the unnecessary use of this fatal instrument. Her child was taken from her fragment by fragment, and yet her pelvis and organs are perfectly well formed! When will conscience preside over the acts of certain practitioners?—ED.

The ancients, labouring under the false notion that delivery could not terminate favourably to the mother and child except in cases in which the fœtus presents the head, laid down as a principle, that the vertex should always be brought to the superior strait.

From the time of Hippocrates to that of Celsus, cephalic version was exclusively recommended.

Celsus, struck with the difficulties, frequently insuperable, experienced in the performance of this operation, and with the dangers incurred by the mother, recommended the extracting of the fœtus by the pelvic extremity, but only after it had ceased to live. This precept prevailed until the time of Ambrose Paré, and especially of his pupil Guillemeau. They were the first who suggested pelvic version on the living fœtus. Experience has since proved the excellence of this suggestion, and the practice has been universally adopted.

Cephalic version had completely fallen into oblivion, when, at the end of the last century, Flamant in France, and Osiander in Germany, endeavoured to revive it; they contended that delivery by the vertex is more favourable than by the pelvic extremity; and, in order to give value to their opinion, they exaggerated the difficulties and dangers of the extraction of the fœtus by the feet, and the advantages of cephalic version.

If we may reproach the Germans, and, among ourselves, M. Velpeau, for having spoken too favourably of this practice, we must at the same time admit that it has been too severely condemned by Baudelocque, Madame Lachapelle, and most modern accoucheurs. If the principles inculcated by the advocates of this practice be not altogether true (as I shall demonstrate); if this operation be not applicable to all cases; if it be accompanied by difficulties and dangers not met with in pelvic version; and if this latter should be preferable in cases in which it is possible to choose the one or the other, it is nevertheless certain that it is, under certain circumstances, capable of proving highly useful. But this is not the place to institute a parallel; this discussion will be more proper when speaking of the presentations of the trunk, in which cephalic version should be specially practised.

In the presentation of the vertex, which occupies us at this moment, it is not necessary to say anything about bringing the head to the superior strait, for it is there already; it is to pelvic version that we must have recourse in order to extract the fœtus.

§ 1. *Pelvic Version.*

It is proposed, in pelvic version, to bring the feet or knees of the child to the superior strait, and deliver the fœtus by means of tractions made on these parts.

Necessary Conditions.

In order that pelvic version may be practised, it is necessary, 1st. That there should be no disproportion between the head of the fœtus and the superior strait; that the pelvis, in a word, be not

contracted, or, if mal-formed, only slightly so, and especially that it be not regularly small in its deformity. Among the deformed pelves, there is only one species which will permit the performance of this operation—it is the oblique pelvis of Nægele. In fact, in this case, one side of the pelvis generally increases as much as it loses on the other side, and, by bringing the fœtus to the extended portion, it is possible to extract it readily, and without much danger.

Hydrocephalus, it must be understood, would be a positive contra-indication.

If, notwithstanding these sage precepts, the accoucheur should attempt pelvic version in a pelvis presenting less than three inches and a half, it would be easy to engage the pelvic extremity, the diameters of which are small, but insurmountable difficulties would be encountered in extracting the head. In fine, the head most frequently reaches the superior strait in a state of extension more or less marked, and then presents those diameters which oppose its descent. This circumstance is exceedingly dangerous to the child, not in consequence of the application of the forceps, which has been erroneously recommended in this case, for it is impracticable, inasmuch as the head being at the superior strait, the trunk closes up the pelvic cavity; but the danger arises from the tractions which are made on the fœtus, and the murderous operations had recourse to when the head cannot be flexed, or extracted as it presents.

2d. The orifice should be sufficiently dilated and dilatable, not only to permit the easy introduction of the hand, but also the ready extraction of the fœtus. In pelvic version, the fœtus represents a cone, the summit of which engages before the base, and the parts which present successively at the orifice become more and more voluminous. If, therefore, the orifice be imperfectly dilated, the first portions of the fœtus, the feet, descend readily, but the shoulders and head offer a resistance more or less marked, and while the orifice is undergoing the necessary dilatation, the child may be sacrificed by compression of the cord.

3d. Finally, the head should not be too much descended into the pelvic cavity, and especially it must not have passed the mouth of the womb. If, indeed, the head were deeply engaged in the cavity, even if it should not have passed the orifice, great difficulty would be experienced in pushing it above the superior strait; and if it should have passed the orifice, it would be impossible again to carry it into the uterus without risking the destruction of the natural relations which unite this organ to the vagina, and likewise incurring the danger of rupture of the womb.

Preliminary Precautions.

As soon as the operation is decided upon, we should carefully conceal from the patient the true nature of it; she should be told that only a slight change is to be effected in the situation of the fœtus, and, at the same time, assured that the consequences both to her and the child will not be serious; but the accoucheur should

never delay the operation of turning because he has not obtained the consent of the patient. Indeed, when he has determined to perform an operation on which often immediately depends the safety of both mother and child, the accoucheur should not even ask consent, for it only alarms the patient, and frequently causes her to object positively to the operation. He should be the sole judge in the case. But if it be proper, and even indispensable, to conceal the fact from the patient, it is also most important to communicate with those around, and explain to them the dangers to which the mother and child will be exposed by the operation; such conduct will in no way change the result, but it will have the great advantage of relieving the accoucheur of much unnecessary responsibility. If an unfortunate result should follow, much less censure will be attached to the accoucheur, he having previously prepared the friends for the possibility of such an occurrence. But he must be guarded in his communication, lest he should infuse alarm into the minds of the assistants which they cannot conceal, and which might positively affect the patient.*

This being done, the accoucheur should see that everything which may be necessary to resuscitate the child, in case of need, is previously arranged near a window easy to open (cold and warm water, vinegar, napkins, a feathered quill, &c., &c.). Then he should have himself provided with what he may find necessary during the operation; cerate, if it can be procured, and if not, fresh butter or lard. These substances will be preferable to oil in facilitating the introduction of the hand; finally, napkins, a fillet, and small compresses should be in readiness. The preliminary preparations should be made very quietly, for fear of alarming the patient.

* I differ in opinion from our author, that the necessity of the operation should be concealed from the patient. On the contrary, I think she should not only be informed of it, and her assent obtained, but she should likewise know that her child will incur more or less hazard in consequence of the operation; but, at the same time, she should be given to understand that it is an alternative presenting the best chance of safety both to herself and offspring. Turning is an operation too delicate in itself, and too grave in its possible results, ever to be attempted heedlessly, and without the entire approbation of the patient. Dr. Chailly, it seems to me, does not view this question with his usual acumen; and I am sure he will agree with me that no sane surgeon would attempt a surgical operation of any import—for example, the putting a ligature around the femoral artery, the extraction of a cataract, or the amputation of a limb—without previously conferring with his patient, and obtaining a full and cordial consent. Suppose, however, he were to proceed without this conference; the first stroke of his knife would infuse terror into his patient, and the agitation consequent on this alarm might cause that knife to be plunged into an artery, from which would flow his life-blood in streams too copious to be arrested by the affrighted surgeon! What is turning? It is the introduction of the hand and arm into one of the most important viscera of the human economy, and the slightest violence on the part of the operator, or undue effort on the part of the patient, may occasion rupture of this organ, and thus produce instantaneous death. Suppose, for example, the accoucheur attempts the operation without previously informing his patient; he pulls off his coat; lubricates his hand and arm; passes them into the womb; peradventure, he may have reached the feet at the fundus; the patient becomes suddenly terrified; she is awakened as if from a dream; she exclaims, "Doctor, what are you doing?" the fearful suspicion crosses her mind that something is wrong; the doctor is busy with the operation; his bare arm is completely within the cavity of the womb; the patient again exclaims, "Good God! doctor, what are you doing?" intent on his work, he makes no reply; the patient, phrased with alarm, attempts suddenly to tear herself from his grasp; this effort thrusts the operator's arm through the walls of the uterus; she sickens; becomes faint, pulseless, speechless; she dies; and dies, perhaps, with that arm still in her womb!! Such may be the consequences of turning, if the patient be not previously informed of the accoucheur's intention.—ED.

With as little disturbance as possible, the female should be placed in a proper position, and the assistants should have their stands assigned them, and the duties they are to perform pointed out.

The patient should take the same position as in the application of the forceps; she is placed across the bed, the breech brought to the edge of the mattress, under which must be inserted a hard cushion; the feet must rest on the knees of two assistants placed on either side. She must be supported by pillows placed between her back and the wall; an assistant will stand by her, as much to encourage and afford her any aid which may be required during the operation, as to hold her should it become necessary. All this should be done promptly, quietly, and without confusion; this precaution cannot be too rigidly insisted on. Let all these preparations be so simplified as to pass unperceived. Such is the point to which the efforts of the accoucheur should be directed.

He should then take off his coat, unless the sleeves should be so large as to enable him to roll them up above his elbow; the coat of the accoucheur should always be made in this manner, for it will spare the patient the alarm occasioned by removing the entire coat.

On the other hand, he should not content himself with rolling up his sleeves partially, for it is absolutely necessary that the fore-arm be completely naked, not that we are always obliged to introduce it entirely into the parts, but because, if this should become indispensable, the sleeve of the coat interfering with the introduction of the arm, it will become necessary to withdraw the arm from the maternal organs, in order to lay it bare.

This circumstance will have the triple inconvenience of occasioning suffering to the patient, retarding the operation, and inspiring doubts as to the skill of the operator.

The position of the fœtus should then be ascertained, both by the touch and auscultation, if the touch be not sufficient to point out the diagnosis. In a word, the choice of the hand will depend on the knowledge of the position; it is, therefore, essential that this latter should be understood.

It is not, however, necessary to distinguish between an anterior and a posterior position; this is useless. It will suffice to know that the occiput and back are to the left, or to the right. These two circumstances alone will determine the choice of the hand. When the occiput is to the left, whether posteriorly or in front, the left hand is to be employed. When to the right, either in front or posteriorly, the right hand must be selected.

This choice of the hand is useful, because it enables the accoucheur to introduce his hand with the palm regarding the anterior surface of the fœtus, and reach more readily the parts after which he is searching; it also facilitates the movement of flexion of the child on its anterior plane, an indispensable condition, in order that turning may be practised without the fœtus being exposed to unnecessary danger, and the womb to lacerations.

But it must not be supposed that this choice is rigorously neces-

sary, and that a neglect of the precept will always result seriously. Every one knows, on the contrary, that when the fœtus is movable, that is to say, when the membranes are intact at the time version is practised, this operation may be performed as well with one hand as the other. The hand, which then enjoys great liberty, can reach the parts it seeks with entire facility.

Thus, in cases in which it is impracticable to recognise the position, in consequence of the integrity of the membranes, and the absolute impossibility, from particular circumstances, of ascertaining the position by auscultation, the accoucheur should not despair of success in the operation. He introduces the right hand, the use of which is most familiar to him; and in most instances, even when the other would have been indicated, he will succeed as completely as if he had made a rigorous selection of the hand.

After the rupture of the membranes, a sanguineous tumour may disguise the position; it may also occur that the agitation of the patient will prevent the accoucheur from having recourse to auscultation. In this case, too, he will introduce the right hand. But if this hand, oppressed by the contractions of the uterus, and not finding itself in relation with the anterior plane of the fœtus, cannot easily seize the feet or knees, it should be withdrawn, and the other introduced. Nevertheless, the accoucheur should, as far as possible, insist on the choice of the hand. Occiput being to the left, left hand; occiput to the right, right hand.

The whole of the fore-arm and the dorsal surface only of the hand should be well greased. In fine, the parts of the fœtus are, in general, very slippery, and we should not increase the chance of failure by lubricating the internal portion of the hand which is to seize these parts.*

Operation.

All these precautions having been observed, and being assured that the urine has been voided, and the bladder empty, and introducing the catheter, if it should be necessary, the operation should be commenced. I will describe the operation in the left occipito-iliac position, and it will be easy to understand it in the other, right occipito-iliac position.

Pelvic version is composed of three periods: the introduction of the hand, the evolution of the fœtus, and its extraction.

First Period.—The accoucheur, placed in front of the patient, stands up or rests on his knees, depending on the elevation of the bed, and, before proceeding, he places the hand not to be introdu-

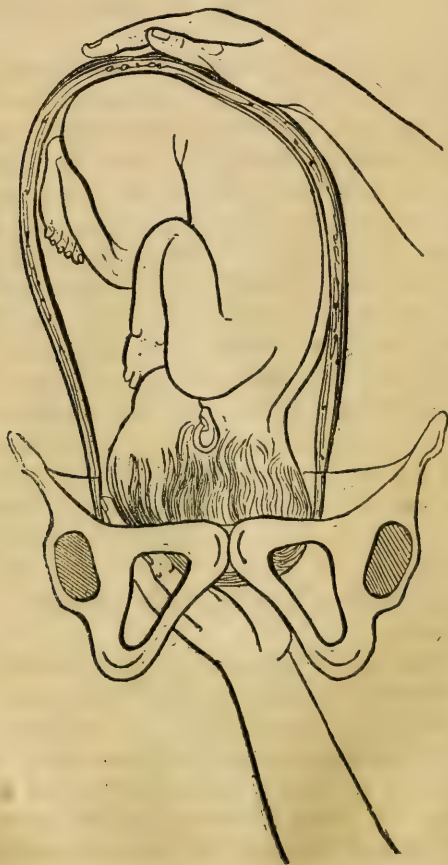
* This advice I cannot consider judicious. If the dry hand of the accoucheur come in contact with the organs of the mother, or the surface of the fœtal body, there will, undoubtedly, be risk of injury to these parts, to say nothing of the want of facility which the dryness of the hand will occasion in the performance of the operation. The objection urged by Dr. Chailly why the palm of the hand should not be lubricated is (admitting its validity, which, in most cases, I do not) of far less importance than the injury which might result if this rule were neglected. One of the essential points, in my opinion, to be kept constantly in view by the accoucheur, is to have the entire hand and arm thoroughly anointed before attempting the operation of turning. The soft parts of the mother as well as the body of the fœtus are thus guarded, and the facility of introduction vastly increased.—Ed.

ced upon the fundus of the womb, in order to compress it when necessary. I am in the habit of recommending this precaution thus early, not that it is necessary at the commencement of the operation, but because my experience teaches me that it is the only certain means of not forgetting it at the moment it becomes indispensable, that is, when the hand is penetrating the uterine orifice. The observance of this rule is exceedingly important, for its omission may occasion alarming consequences to the mother, such as rupture of the points of attachment between the orifice and vagina, and laceration of the uterus in other portions of its extent.

If there should be an intelligent assistant, to whom this duty may be confided, it may be intrusted to him, although the accoucheur may do it very well himself; for the use of the two hands is not required in the extraction of the fœtus, except when it is no longer necessary to maintain in place the fundus of the womb.

The hand which is to penetrate the organs of the mother must be introduced slowly and gently into the vulva, except the thumb, which is to be united to the other fingers as soon as the hand is introduced as far as the wrist, rotating it at the same time, and diminishing as much as possible its volume. These precautions cannot be too scrupulously observed, especially in primiparæ. The intro-

(Fig. 147.)



duction of the hand is, in general, the most painful part of the operation.

What time should be selected to penetrate the external organs? Authors are not agreed on this point. It has been recommended to select the period of pain, in order that the patient may attribute to the contraction of the womb the suffering occasioned by the introduction of the hand. But it is well known that the contrary always takes place, and that women are much more disposed to ascribe the uterine pain to the accoucheur, no matter how simple his investigation may be. Thus, after the example of M. P. Dubois, my advice is to introduce the hand only during an interval of calm; the patient can then distinguish between the pain occasioned by the introduction of the hand and that resulting from uterine contraction.

The hand must be introduced in the direction of the axis of the vulva and inferior strait; as soon as it has entered the excavation, it must change its direction in order to penetrate the orifice of the womb; and, therefore, it must pursue the axis of the superior strait. To enter the cavity of the uterus, the accoucheur must avail himself of an interval of calm when this organ does not contract. If this rule be neglected, by attempting to force the resistance of the contracted womb, he may cause its rupture. Finally, at this moment the fundus of the organ should be properly compressed, either by the hand of the accoucheur or by that of an assistant.

All these precautions being taken, if the membranes be ruptured, the hand can enter the cavity of the uterus. If it be well dilated, the hand penetrates without difficulty between the head and maternal parts, without being obliged to push these aside. Should the orifice, without being dilated, be in a dilatable condition, the fingers will penetrate gradually and cautiously, and very carefully move the head of the infant, which reposes on the orifice, but not by seizing it with the *full hand, the thumb placed here, the four fingers there, &c., &c.*, in order to place it in the iliac fossa corresponding with the occiput; for we can enter the uterus without being obliged to *bring the thumb by the side of the index finger*, and follow minutely a multitude of precepts, which are entirely useless, and which, in my opinion, are not put into practice even by those who have recommended them. It frequently happens that the uterus is thrown into contraction by the irritation produced on the orifice in consequence of the introduction of the hand. In this case, the accoucheur should desist, but not withdraw the hand; he should continue it there in order to be ready to introduce it the moment the contraction ceases.

As soon as the hand is introduced, he must assure himself that he is not deceived as to the position of the fœtus, and, consequently, that he has selected the proper hand. If, however, he discovers that he has been mistaken, he should still continue the operation, if the uterus should not be firmly contracted; and this contraction rarely occurs when we practise version in the presentation of the vertex. But if it should happen that the uterus be in a state of

contraction, and the hand encounter difficulty in passing between this organ and the foetal body, it should be withdrawn, and again introduced with the palm regarding the anterior surface of the foetus. Occiput being to the left, left hand; occiput to the right, right hand.

If the membranes be intact at the moment the hand reaches the orifice, what course is to be pursued? Under these circumstances, should the accoucheur rupture the membranes at the centre of the orifice in order to penetrate the uterus; or, rather, should he pass his hand into the orifice, gradually separating the membranes from the internal surface of the womb, then carrying his hand up to the feet, seize them, and break the membranes?

Those accoucheurs who have recommended this latter mode, allege in favour of their opinion that the hand, in thus passing between the membranes and uterus, reaches the upper portion of the foetus without there being an escape of one drop of amniotic fluid, and that thus the hand, traversing the uterus, which is not contracted, can, at the moment it ruptures the membranes, very readily bring down the feet, and in this way complete the second period, or that of evolution. While, on the contrary, in rupturing the membranes in the centre, the fluid is allowed to escape, the uterus contracts, and the operation becomes very difficult.

The advantages of the previous separation of the membranes before their rupture have always appeared to me more speculative than real, and the inconveniences of the rupture in the centre very much exaggerated.

When the hand breaks the membranes at the moment it penetrates the neck of the uterus, there is a discharge of fluid; but the wrist, and then the arm, which immediately follows the hand, completely closes up the orifice, and sufficient fluid remains in the womb to permit the ready evolution of the foetus. Again, the small quantity of liquid that has escaped does not produce immediate contraction of the organ, and the hand still enjoys great freedom.

In the second process, on the contrary, the operation is longer, more difficult, often impracticable, and dangerous. Thus, the separation is not always possible, and to accomplish it will require more or less time, during which the suffering and danger incurred by the patient are prolonged, and the safety of the child involved. Besides, even when the separation is easy, it may be followed by certain inconveniences: the placenta may be encountered by the hand during its passage, and its partial or complete detachment be effected, which might cause the death of the foetus, and seriously endanger the life of the mother by inducing hemorrhage. It is in vain to urge that the placenta can be easily distinguished from the membranes; for it is certain that this distinction cannot be made as readily as authors contend; and it is, therefore, wise not to expose the mother and child simply for the purpose of obtaining so slight an advantage.

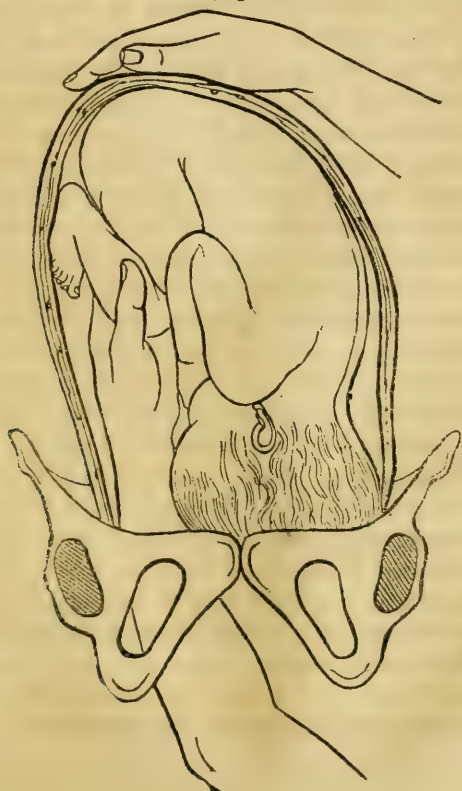
In fine, we should rupture the membranes in the centre, at the moment of penetrating the uterus, and the separation of the mem-

branes should be reserved for those cases in which, being partly effected, it will be found easy to accomplish; but we should not insist on this separation, in order to reach the feet, if the slightest obstacle should present itself, and we should then rupture the membranes as soon as the obstacle is encountered.

Whether the membranes have been ruptured in advance, or whether they are perforated the moment the hand enters the womb, the mode of proceeding to arrive at the feet is always the same: the accoucheur introduces his hand gently between the uterus and head, and following the anterior plane of the fœtus, he passes over the face and chest, and carries the hand as far as the knees, which he finds nearer the head, in proportion as the contractions of the womb have increased the flexion of the fœtus. This mode of proceeding is the most easy, prompt, and least painful, because it does not require such a complete introduction of the hand into the organs.

Some authors recommend to follow the back of the fœtus, or the side which regards the posterior portion of the pelvis, and, during the progress, search for the arms and hips, and on reaching the breech, to seize the feet and bring them down. In this way, they observe, we will avoid confounding the arms with the legs; the road is longer, but it is more certain. Indeed, one is almost tempted to believe that those who give this counsel have never had their hand in the uterus, or that they simply repeat, on the faith of another, a precept which they have never carried in practice themselves, as is too often the case.

(Fig. 148.)



In the first place, this rule cannot be followed except in cases in which the hand has great facility of motion in the womb. Then only can it make lateral movements and penetrate deeply, and then all is possible. But every accoucheur knows that it is extremely difficult, in most cases, to proceed this long distance, when the uterus is contracted on the fœtus; and that, in adopting this rule, which requires much of the arm to be introduced, and manipulations painful to the mother, we will be as likely to mistake a hand for a foot as by the method I advise. The accoucheur should, by all means, practise on a dead infant in order to distinguish the hand from the foot; this preliminary knowledge every practitioner should possess. If, in fact, this mistake were made, nothing serious would arise from it. It would only be necessary to let go the hand as soon as the error was detected, and proceed to search for a foot or a knee.

This circumstance is of too secondary a character to authorize the precept generally given. I regard it as useless, painful, and tedious under the most favourable circumstances, and impossible in cases of difficulty; whereas, in carrying the hand along the anterior surface of the fœtus, the feet and knees will be found at a very short distance from the head. The distance traversed by the hand is shorter and more direct, and the operation is much less painful.

Farther, this is the only mode to be adopted when the contracted uterus will not permit the hand to pass directly towards the parts it seeks, and opposes its lateral movements.

I remember that the first case of version which I saw performed by M. P. Dubois, the foot of the infant was already seized and brought into the vagina, before it appeared to me the operation had been commenced. His hand and wrist only were introduced into the maternal organs, and directed to the anterior surface of the fœtus. It is always in this way that I have since noticed this excellent master proceed, and I have entirely adopted his method, so far preferable to the absurd precepts I had imbibed previously to becoming his pupil; precepts which I had always followed until this period, and which often led me into difficulties from which I could not well extricate myself. How often have I attributed the obstacles which I encountered to my own want of skill, while they were due altogether to my adherence to rules often impossible to put in practice!

While the hand is passing up between the uterus and body of the fœtus, if this organ should contract, the hand should be applied flat on the fœtus, and remain perfectly quiet during the period of contraction; in the interval of calm, the accoucheur again proceeds.

Evolution of the Fœtus.—When the hand has reached the inferior extremities, it seizes whatever it meets with, whether a knee or a foot, and brings it down by giving to the fœtal body its natural flexion. This movement of evolution should always be effected in the absence of pain: such are the only rules to be observed during this period of the operation. I have often seen them reduced to practice by M. P. Dubois, and my own experience has for many

(Fig. 149.)



years satisfied me of their excellence. Most authors, however, enter into much more minute details, but they are more or less useless and impracticable.

Thus, they recommend that both feet shall be grasped at once, and that when only one can be reached, it should be brought down, and the accoucheur should proceed to search for the other.

Others concede that, strictly speaking, we may be content with one limb, when it is the sub-pubic which has been seized ; but should it be the posterior, we should immediately search for the other ; and these precepts are laid down without any principle, nor are we told why one extremity should be preferred to another.

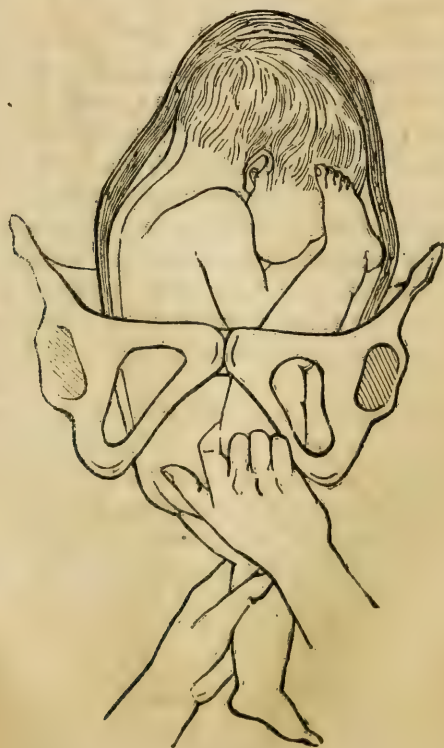
Finally, these authors go so far as to indicate the exact manner of seizing the limbs, the respective situation of each of the fingers of the hand, and the points of the foetal body to which they are to be applied.

This is precision, indeed, but there is but one answer to it, viz., to seize the limbs as we can, grasp both at once, which is rarely possible ; and when we can only take hold of one, which is the rule, we do not know, in most cases, whether it is an anterior or posterior extremity ; and even if we could distinguish the extremities, the result would in no way be changed, for we must pull on the limb that has been grasped, without feeling that it is necessary to search for the other. In a word, in the great majority of cases, turning is accomplished as well with one as with both extremities. The limb that has not been seized lies on the anterior surface of

the fœtus (see fig. 150), and the pelvic extremity descends with facility. It will be understood that, since the entire pelvic extremity may descend spontaneously, it will pass down the more readily when it is partly delivered, and we are enabled to make tractions on it. If we are sometimes obliged to seek for the other extremity, this will depend on particular circumstances, which I have heard stated only by M. P. Dubois, and to which I shall allude immediately.

Extraction.—As soon as the knees, feet, or even one foot, or one knee, shall have been brought into the vagina, moderate and gentle tractions must be made on this part, taking care always to do this during a contraction of the uterus. The contraction aids, in the first place, the extraction; then it keeps the head flexed on the chest, and the arms in their natural relations; in no case should the tractions be continuous and rapid. No matter what may be the severity of the accident for which version is had recourse to, there will always be time to extract the fœtus with that care and delicacy so necessary to guard both itself and the organs of the mother. It will be necessary, also, to impart to that portion of the fœtus on which tractions are made a movement of torsion, in order to bring as much as possible the back behind the right cotyloid cavity. In the position of which we now speak, this precaution should be taken at the time of the first tractions, in order that the various portions of the fœtus may participate in this movement before their descent. On the contrary, if we delay until the parts have descended too far, this torsion may fall on some determinate point of the fetal axis, and thus injure its organs.

(Fig. 150.)



But as soon as it is possible to hook the groin of the other limb, the index finger should be carried there, not with a view to bring down this extremity, as all the pupils endeavour to do when they operate on the manikin for the first time, but merely to draw on this part, and thus aid the tractions which are exerted on the limb first seized.

If, by chance, both extremities have been brought down at once, we should make tractions more particularly on the anterior, in order to endeavour to bring the back of the fœtus in front; and for this purpose, both limbs must be grasped, taking care not to injure them with the ends of the fingers. It is also advised, in this case, to place carefully *the thumb on the posterior surface of the limb, the index and middle fingers on the external surface, the ring and little fingers on the anterior surface*. What precision! It requires no comment from me, for the reader will readily perceive its utter inutility. The only precaution, I repeat, for the accoucheur to observe, when he determines on the extraction of the fœtus, is not to bruise the parts;* to embrace them by broad surfaces, and not al-

(Fig. 151.)



* The rules indicated by Dr. Chailly are well worthy the consideration of the pupil; and, if observed, will render the operation of turning comparatively trifling, so far as the safety of the mother and child is concerned. There is, however, one suggestion I have to make; it is this: as soon as the feet protrude through the vulva, instead of seizing them with the naked hand and making tractions on them, it would be better to envelop them in pieces of soft lin-

ways to press on the same points. Thus, in proportion as the fœtus is delivered, the accoucheur should place his hands as near as possible to the vulva, and, as far as practicable, let the bones be his point of support.

In all cases, as soon as the finger can reach the umbilicus, he should make slight traction on the placental extremity of the umbilical cord, in order to relax it; he will in this manner avoid rupturing it in the event of its being tense. If the fœtus be across the cord, the posterior limb should be disengaged from the loop formed by the cord, and this latter should be placed in the concavity of the sacrum, where it will be less likely to be compressed than at any other part.

If care have been taken not to make tractions except during the contractile efforts of the womb, the arms often pass down crossed on the chest before the head, and their descent is effected alone, in proportion as the trunk is extracted. But if the tractions have been continuous, and often even when the rule has not been departed from, the arms, in proportion as the trunk is delivered, become applied against the two sides of the head, and oppose the extraction of this latter; we must then proceed to their delivery.

(Fig. 152.)



en, and thus continue the tractions, the linen intervening between the hand of the accoucheur and the extremities of the fœtus. Without this precaution, there will be danger of injuring the delicate, soft parts of the infant. This is a rule which I always observe.—Ed.

We commence with the arm which is behind, because there is more space in the concavity of the sacrum to effect this disengagement. The back being to the right, the index and middle finger of the left hand are glided together along the humerus, the thumb serving as a support below; then the arm is depressed in the direction of its flexion, bringing it over the face and chest: we next proceed to the extraction of the arm which is in front; the procedure is the same, except that we employ in preference the right hand when the back is to the right.

(Fig. 153.)



It sometimes happens that the delivery of the arm which is in front is extremely difficult; in this case, we must have recourse to the rule of M. P. Dubois; I have often seen him employ it with success, and I have already experienced great service from following it; it consists in imparting to the trunk a movement of rotation from behind forward, and from right to left with the left hand, while we depress the shoulder which is in front into the concavity of the sacrum with the right hand. This slight torsion on the neck of the infant is without inconvenience, and it renders the descent much more easy.

The head ordinarily enters the cavity flexed, the occiput corresponding to one of the points on the anterior portion of the pelvis, and then it will be sufficient to give to the trunk a slight movement of rotation, which brings the back of the foetus quite forward, in or-

der to complete the movement of internal rotation of the head. This being accomplished, the trunk of the fœtus is raised, and the delivery of the head is generally effected by itself, or under the influence of a very slight effort.

But if the descent of the head should not take place, we must hasten to extract it. For this purpose, the entire hand is carried along the sacrum; two fingers of this hand are introduced into the mouth of the fœtus, and flex the head by depressing the under jaw, while the other hand, placed above the shoulders of the fœtus, makes tractions on them; to these partial movements of the two hands must be joined a movement of elevation, from A to I; a movement which is executed simultaneously by the two arms. It is in this way only that the head can be extracted when it re-

(Fig. 154.



sists, and not by placing two fingers on the sides of the nose, and two on the occiput, as some authors have recommended.

I know for myself that, whenever I have been obliged to deliver the head after the extraction of the trunk, I have never been able to obtain a sufficiently firm hold on the sides of the nose, which are smooth and slippery; and I have always been obliged to have recourse to the rule laid down by Madame Lachapelle, and which is adopted exclusively by all accoucheurs who are familiar with the practice of the obstetric art.

How often has the life of the child been sacrificed by consuming precious time in these vain attempts!

On two occasions I had an opportunity of witnessing this fact, as also the excellence of the mode I advise, and the inutility of the other.

I was called by Dr. A. Robert to see a female living in the Place des Italiens. A physician, whose name I could not learn, had been endeavouring for an hour to extract the head of an infant, the trunk

of which was delivered: the child was dead. He tried in vain to flex the head by pushing up the occiput, and seek to depress the sides of the nose; all these attempts proved ineffectual. In two seconds I completed the delivery.

I arrived one day at the *salle des accouchemens*, in the absence of M. P. Dubois; a female was in labour, and had just been delivered of a fœtus that presented by the pelvis; the trunk was entirely out of the vulva, but for fifteen minutes two persons had been endeavouring, without success, to extract the head, which was solidly fixed in the pelvic cavity. One of them, for whom I entertain great esteem, was about applying the forceps, when, on seeing me, he begged that I would attempt to deliver the head. There were a number of pupils present, and I was therefore anxious to terminate the delivery. I introduced two fingers firmly on the inferior jaw, and two on the shoulders, and by means of a movement of elevation and direct traction, I extracted the head in less time than it has taken me to describe the case. Unfortunately, the child was dead. The head was so firmly fixed, that I was obliged to make very considerable effort, and I retained for several days the marks of the contusion which the under jaw had produced on the middle finger of my right hand.

Far be it from me to censure those who had given assistance to this patient; they failed because of too much confidence in a procedure which almost always is ineffectual.

If the fœtus cannot be rotated on its axis, by which the back is brought in front, and should have been delivered with its face above, and the occiput in the concavity of the sacrum, still the extraction may be accomplished; however, it would be more difficult.

(Fig. 155.)



Two cases may then present in which the head descends flexed, because care has been observed in making the tractions. Then the forehead and occiput present together at the inferior strait; and it is the full sub-occipito-frontal diameter which measures the delivery of the head; if it should not be accomplished, it must be facilitated by endeavouring to depress the under jaw with two fingers, while with the other hand direct traction is made on the trunk (from O to B), slightly depressing it (fig. 155); should too much difficulty be experienced, we should, without loss of time, elevate the trunk from A to I (fig. 156), in order to make the forehead pass under the pubes, and to disengage the occiput at the commissure of the perineum. Or the head may reach the pelvic cavity in a state of extension; and in this case, it cannot be extracted except by raising considerably the trunk from A to I, thus causing the occiput to pass out first posteriorly. It is very rare that these means alone will not suffice to deliver the head, without recourse being had to the forceps.

(Fig. 156.)



Turning in case of Twins.

If the fœtus be contained in the uterine cavity, we must be careful not to seize both feet if they should present themselves, for we should incur the risk of pulling on a foot of each fœtus at the same time. Hence the difficulties to which I have already alluded in speaking of the accidents connected with multiple pregnancy.

§ 2. Difficulties encountered in Pelvic Version.

Version is not always performed as easily as I have just stated; occasionally, difficulties more or less serious are met with in this operation; I shall now enumerate them in the order of their occurrence.

Contraction of the Vulva.

The vulva, unless there should be an abnormal conformation, is never so contracted as to offer a serious obstacle to the introduc-

tion of the hand, especially if, before attempting the operation, we delay until the orifice is entirely dilated. In fine, the vulva, together with the neck of the womb, undergoes a sort of preparatory relaxation or softening, which permits the hand to pass it readily enough when the neck itself is permeable. It must be remembered, however, that in primiparæ especially, the introduction of the hand must be effected with great gentleness and care.

Rigidity of the Orifice of the Uterus.

When the orifice is rigid, undilated, and undilatable, we should employ, in order to overcome this resistance, the various means I have already suggested: bleeding, if the patient be plethoric, baths, unctions on the cervix, with the extract of belladonna; but if these remedies fail, and the accident calling for version be of a nature rapidly to compromise the safety of the mother or child, the accoucheur should make several small incisions on the orifice before attempting to penetrate it.

But these incisions will not readily afford passage to the hand, unless the orifice, although rigid and undilated, be thin. In the contrary case, if it be thick, after making the incisions with a view to overcome the resistance of the orifice, almost as much effort should be employed as in forced delivery.

Exclusive Rigidity of the Internal Orifice.

Sometimes, when the external orifice is dilated and supple, the hand experiences great difficulty in surmounting the resistance of the internal orifice, which contracts spasmodically upon it, and obstructs its passage to the feet. Often this contraction does not manifest itself until after the hand has been introduced into the womb, and it then acts only on the arm of the accoucheur. But this constriction is sometimes so severe, that the extremity is paralyzed, and the fingers are deprived of all action; they touch the parts of the fœtus, but are unable to grasp them. To have some idea of this inability of motion, and of the painful pressure which the arm and hand undergo, it is necessary to have experienced it. This circumstance is often a serious obstacle, which, in retarding the labour, exposes the mother and child to all the consequences of the accidents requiring version. In this case, what course is to be pursued? Withdraw the hand, and introduce the other; if this should encounter the same difficulty, we should endeavour to excite its motion by putting it into cold water; and, at the same time, administer to the patient 15, 20, or 30 drops of laudanum in injection, and embrocations of equal parts of laudanum and the oil of sweet almonds should be made on the abdomen.

Bloodletting should also be practised if there be symptoms of vascular fulness. If, notwithstanding these measures, the resistance is not overcome, which is rare, the accoucheur should request a consultation, in order that his colleague, whose arm has not been suffering from the pressure, may terminate the delivery. This will be an unpleasant alternative; for people, not being able to appreci-

ate the motive of the accoucheur, will interpret it as an evidence of want of skill. It is, however, an extremity to which the most dexterous practitioners are obliged sometimes to resort.

Uterine Contraction.

It is not usual, in presentation of the vertex, for the contraction of the uterus to be so energetic as to interfere with turning. In fine, unless we have reason to suspect a very inclined presentation of the head, or some mechanical obstacle to its descent, if the efforts of the womb have been so powerful as to be followed by a violent retraction of the organ, the head may have descended, under the influence of these contractions, so low as to forbid version, and render the application of the forceps necessary.

Mobility of the Body of the Uterus.

M. P. Dubois is the only one who has pointed out another species of difficulty, which is met with not unfrequently, and which proves an obstacle to the introduction of the hand into the cavity of the womb: I allude to the mobility of this organ. In this case, the hand, uterus, and fœtus form but one whole; the hand cannot pass between the womb and fœtus, and it embraces in its motions both the uterus and infant. It will be seen that, under these circumstances, the only indication to fulfil is to have the womb maintained steadily by an assistant.

Descent of the Head simultaneously with the Feet.

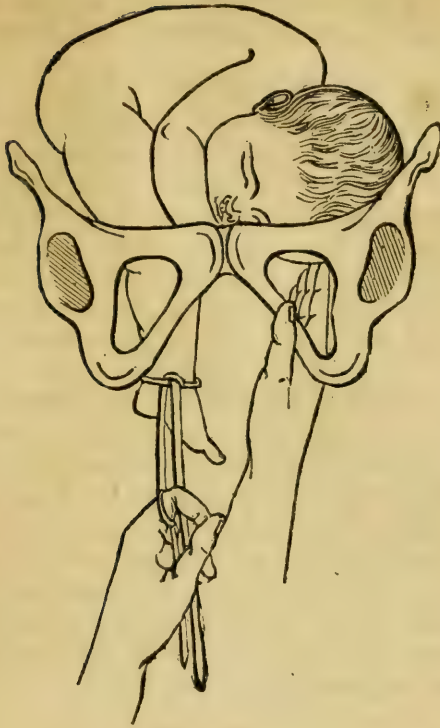
When we have seized only one foot or one knee; the other foot or knee which has not descended performs, with regard to the head, the office of a knotted cord which draws the cork from a bottle, and it brings down the head with it to the superior strait. This same thing may occur when both feet have been grasped, but this is more rare. This accident is to be remedied by pushing up the head with one hand, while tractions are made on the feet with the other; these two movements should be made simultaneously.

Only one Foot can be grasped.

Those cases in which only one foot can be reached, constitute the rule; those in which both are seized, the exception. As I have already remarked, version is effected, in most cases, equally well with one as when both feet are grasped; and we cannot settle, as a general rule, that, having brought down only one foot, the other must be searched for. It is rare, on the contrary, that we are obliged to resort to this expedient.

What circumstances, however, may render it necessary? There is but one; it sometimes happens that the internal orifice, which has allowed the hand to pass freely, contracts on the various parts of the fœtus in proportion as we endeavour to extract them, and the contraction is occasionally so powerful, that the amount of force necessary to employ in order to overcome this resistance may be such as to lacerate and injure the extremity on which the force is

(Fig. 157.)



used. Therefore, to obviate this inconvenience, we should seek for the other extremity of the fœtus; and in making tractions on both extremities at the same time, we shall be less liable to injure them than if we concentrated our effort on one only.

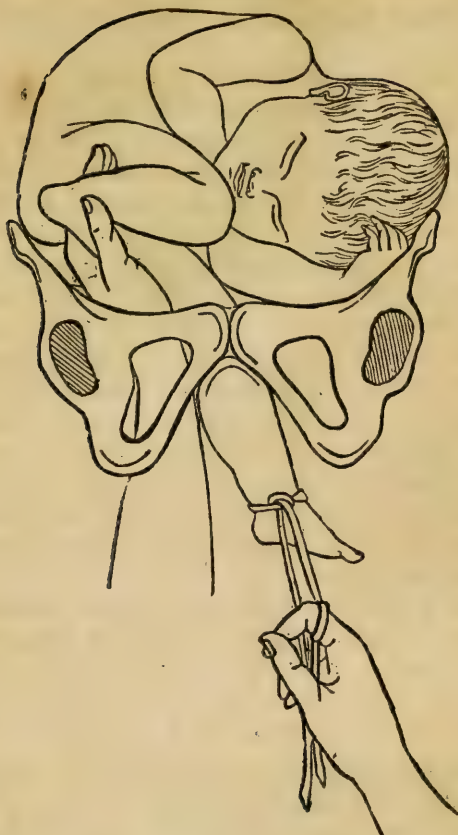
But it cannot be admitted, as some authors have contended, that the obstacle to the extraction of the fœtus in this case is due to the fact that it is placed with its extremities crosswise on the symphysis pubis, one foot resting on the border of the superior strait. How, in a word, can we admit that such causes are capable of opposing the extraction of the fœtus, when we know that the inferior segment of the uterus presents a smooth infundibulum, on which the fœtus easily glides along to the orifice; and that the superior strait, on which the segment reposes, is itself covered with soft parts, which conceal all its asperities?

In seeking for the extremity which he has not been able to bring down, the accoucheur attaches a fillet to the extremity already in the vulva, in order to retain it externally; he then introduces the right hand when the part he seeks is on the left, and the left hand in the contrary case, and, grasping the extremity as he can, he extracts it from the womb (fig. 158).

Difficulties in bringing down the Arms.

During the extraction of the trunk, the arms may ascend on the sides of the head, and then their delivery is not very diffi-

(Fig. 158.)



cult: all authors agree on this point. The arm in front may offer some little obstacle. I have indicated the rule laid down in this case by M. P. Dubois, which consists in conducting the anterior shoulder in the concavity of the sacrum. But the righting of this arm is not always effected on one of the sides of the head; if it should not have participated in the movement of rotation produced on the trunk, it passes behind the occiput: this accident can only take place in the occipito-pubic position. In the occipito-sacral, on the contrary, it is unimportant, for the descent will be easy in the concavity of the sacrum.

Again, the arm may right itself in two different directions: either in passing the right side of the head over the chest, or in following the back of the infant and the posterior part of the neck. In order, then, to disengage the arm without injuring its articulation with the shoulder, it should be brought down in the direction in which the righting has taken place. Thus, it will be perceived that the difficulty does not consist merely in the descent, but in distinguishing these two modes of righting the one from the other.

Some authors have given precepts by which, they contend, it is very easy to recognise these two species of righting: if it occur in the anterior and superior direction, the inferior angle of the

scapula is very remote from the spine ; it is, on the contrary, very near the spine when the crossing is effected from below upward and posteriorly.

It is far from being easy to distinguish these two accidents from each other when the accoucheur feels the chest palpitating between his two hands, and with imminent risk of life unless there be prompt action. Under such circumstances, we cannot make these minute distinctions ; the delay of a few seconds, and the infant ceases to live ; we must, therefore, act promptly and decidedly. In all cases, the descent will be very long and difficult to effect, even when the nature of the righting has been ascertained ; often, it will be impracticable. In a word, how can we cause the arm to pass with facility between the occiput and symphysis pubis, when these two parts are in immediate contact ?

But it must also be admitted that the means of diagnosis are not so certain that they may not give rise to error ; and if we be deceived as to the direction of the righting, which may frequently be the case, we will be exposed to the blunder of disengaging in one direction an arm which has been righted in another, and then the articulation may be twisted.

In view of the difficulties of descent and of its delays, in consequence of the impossibility, in most cases, of accurately ascertaining the diagnosis, and on account of the danger of a descent in a contrary direction, it will be much better to have recourse immediately to the method of Madame Lachapelle. "If great difficulty," she observes, "be experienced in disengaging the arm placed between the occiput and symphysis pubis, we should not lose time in endeavouring to effect an impossibility, but the arm should be brought down with the head. The arm may possibly be fractured,* but this latter circumstance should not deter the accoucheur ; for, in forcing the descent, in the majority of cases the fracture will be produced much more frequently than in disengaging it with the head."

We might also, in this instance, employ the rule of M. P. Dubois, and carry the shoulder which is above into the concavity of the sacrum ; then the disengagement of the arm will be effected with tolerable facility, whatever may be the direction of the righting.

Application of the Forceps when the Delivery of the Head, arrested at the Inferior Strait, cannot be accomplished by the Hand of the Accoucheur.

It is extremely rare that the delivery of the head, when delayed at the superior strait, cannot be effected by the hand alone, and that the use of the forceps becomes necessary ; and, indeed, I am satisfied that, in a majority of cases in which this instrument has

* Fracture of the arm is a slight accident in a newly-born child, but the accoucheur should not mention it, lest the parents be alarmed. A compress, containing a piece of paste-board soaked in water, and a bandage to envelop the arm, are all that is necessary in this case. In eight or ten days it must be removed, and the union is perfect.

been supposed necessary, if a proper mode of extraction had been resorted to, and sufficient force applied, the head might have been delivered with the hand alone.

The inferior strait, however, may be so contracted, and the resistance of the external parts so great, as to render the application of the forceps necessary.

In this case, the head may assume four principal positions, and present flexed or extended.

A. Occipito-pubic Position.—Whether the head be flexed or extended, the application of the forceps will be precisely the same. Moreover, the general rules for the application of the instrument will be likewise the same as when the head presents first in a similar position; there is, however, one invariable precept here, which is always to be observed when the forceps is applied after the delivery of the trunk.

The forceps must always be applied at the anterior part of the fœtus, whatever may be its position.

Promptitude is one of the first rules to be observed in this application. Thus, after having enveloped the fœtus in warm linen, the trunk should be elevated as high as possible by an assistant, and the forceps applied below the trunk. The pivot branch, held with the left hand and guided with the right, previously introduced into the maternal organs, is placed on the left of the pelvis; the mortise branch, held with the right hand and directed with the left, is placed on the right. The head is then seized by its biparietal diameter; and when the articulation of the blades is completed, the accoucheur lays hold of the two inferior extremities of the infant at the same time that he grasps the extremity of the forceps, and an assistant supports the trunk of the fœtus. He then delivers the head, elevating the instrument from A to I (fig. 159).

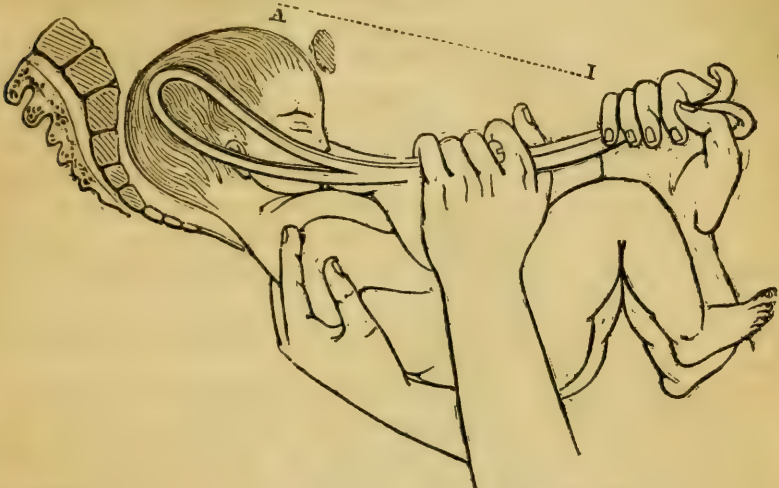
(Fig. 159.)



B. Occipito-sacral Position.—In this position, the forceps is applied in precisely the same manner as in the preceding case.

whether the head be flexed or extended ; but the mode of delivery varies according to one or other of these circumstances. The trunk of the fœtus, in either case, should be depressed as low as possible, in order to permit the introduction of the instrument.

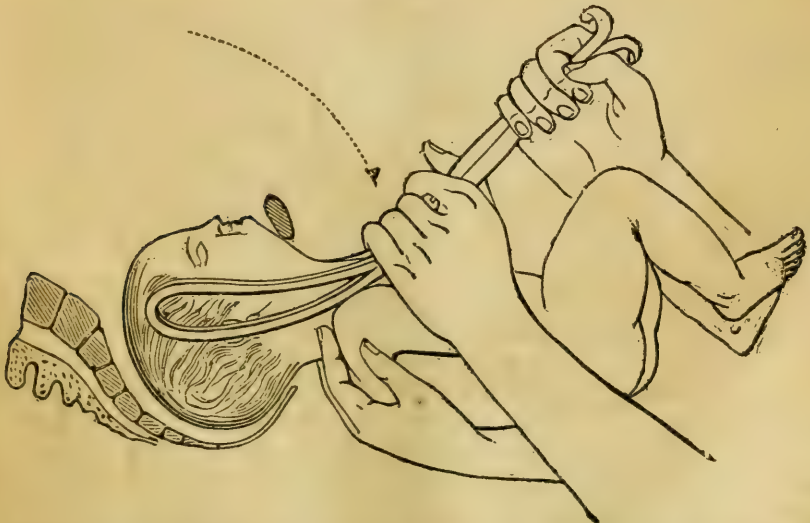
(Fig. 160.)



These precautions being taken, and the forceps applied, if the head be flexed, tractions must be made from A to I, and the forceps slightly depressed, in order to disengage the forehead from under the pubes (fig. 160).

If the head be extended, the delivery will be accomplished by elevating the instrument from A to I (fig. 161), the assistant being always careful, in these two cases, to support the trunk according to the movements of the accoucheur.

(Fig. 161.)



The application of the forceps is a little more difficult in these two cases, when the occiput is posteriorly, than when it was in

front. But in the left occipito-iliac or right occipito-iliac, always after the delivery of the trunk, great difficulty is experienced in the adjustment of the branches. And Madame Lachapelle has recommended very wisely to bring the face into the concavity of the sacrum by means of the hand, and thus apply the forceps in the occipito-pubic position. For this purpose, the right hand of the accoucheur if the back be to the left, the left hand if the back be to the right, must be introduced into the concavity of the sacrum, and the fingers, united in the form of a crotchet, turn the face into the sacrum, while the other hand imparts to the trunk an analogous movement.

(Fig. 162.)



This being accomplished, the head is extracted with the hand (fig. 151); it would only be in case of failure that we should be obliged to resort to the forceps. For this purpose, the trunk of the foetus should be held towards the left thigh; if the occiput be to the left, the forceps should be applied to the anterior part of the infant, the concavity of the borders regarding the occiput, that is, the left, and we should commence with the pivot branch.

When the instrument is articulated, the accoucheur rotates it from left to right, which will bring, simultaneously, the concavity

of the borders of the instrument and the occiput under the pubes. The delivery is then effected as in an occipito-pubic position.

(Fig. 163.)

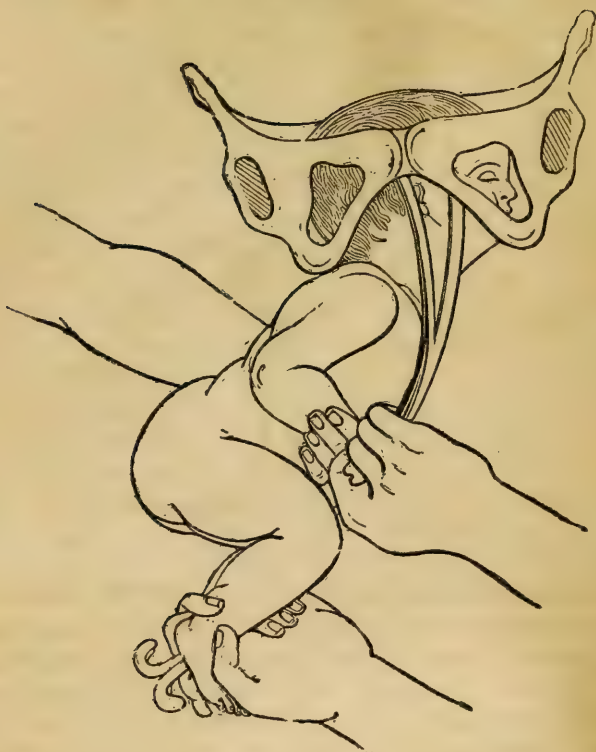


In the right occipito-iliac position, the trunk must be kept towards the right thigh, the concavity of the borders of the instrument being directed to the right; the rotation must be from right to left, &c., &c. (fig. 164).

These applications, whether the head be diagonal or transverse, are extremely difficult; but happily, in most cases, we will be able to bring the face into the concavity of the sacrum by means of the hand (fig. 162), when it corresponds to one of the two sides of the pelvis.

This manipulation has also been recommended when the face is above; but it is entirely impracticable: the hand and wrist cannot penetrate deep enough to turn the head, and the fingers, therefore, cannot reach the face. In order that this operation may be performed, the pelvis should be very capacious and the head very small; in this case, the operation would be useless, for the head would readily follow the rotation imparted to the trunk, and the face would be thus brought into the concavity of the sacrum without the introduction of the hand, and without the forceps.

(Fig. 164.)



The Head may be retained at the Superior Strait

A. Well-formed Pelvis.—We must, in the first place, suppose that there is no disproportion between the pelvis and the head of the foetus. In this case, the head cannot be arrested at the superior strait if proper tractions have been made, and especially if we have been careful to employ them only during the contractions of the uterus. The head will readily pass this strait in presenting its occipito-frontal diameter; but if the tractions have been continuous, the head, being no longer retained in its position of natural flexion by the contractions of the uterus, becomes extended, and then presents at the superior strait its occipito-mental diameter.

This accident may occur in two principal positions: occipito-pubic, and occipito-sacral.

a. Occipito-pubic.—The occiput rests on the pubes, the chin on the sacro-vertebral angle. The accoucheur introduces his hand under the trunk of the foetus, and passes it high enough to place his index and middle fingers in the mouth of the infant, and, in thus bringing down the chin first, he substitutes for the occipito-mental diameter, measuring five inches, the occipito-frontal diameter, which measures four inches. This operation is not very difficult: the trunk does not so completely occupy the pelvic cavity as to prevent the introduction of a *small* hand between the chest and the concavity of the sacrum.

(Fig. 165.)



b. *Occipito-sacral*.—The occiput rests on the sacro-vertebral angle, the chin on the symphysis pubis. Here it is not possible to introduce the hand between the symphysis pubis and the chest of the fœtus, in order to depress the mouth, and, consequently, the chin. There is not sufficient space between these parts to permit the passage of the smallest hand. We must, therefore, abandon this method. The accoucheur should carry the right hand posteriorly, in order to embrace the occiput and direct it to the left, and, consequently, the face to the right; this should be combined with a motion of elevation of the wrist, to flex the head, in supporting the occiput. This being accomplished, that is, the face regarding

(Fig. 166.)



one of the points of the right side, the hand endeavours to reach the face, as in fig. 162, and directs it posteriorly. Two fingers are then introduced into the mouth, and they complete the flexion of the head, if it be not sufficient, and deliver it.

This manipulation, as must be evident, is extremely difficult to execute; it is, however, the only innocent plan to be resorted to in a similar case. If the delivery of the head cannot be effected in this way, we have no other alternative than the method I shall indicate farther on.

B. Malformed Pelvis.—I have mentioned, among the contra-indications for turning, two circumstances of equal value: *excessive size of the head, and contraction of the pelvis*. It is often in our power, before attempting version, to ascertain the condition of the pelvis; but this is not always possible, and it frequently happens that, in performing version in a pelvis which we suppose to be well formed, we are surprised at meeting obstacles to the descent of the head. These obstacles reveal to us the fact that the pelvis is contracted, but so regularly that the circumstance escaped our observation.

Again, in consequence of the difficulties of ascertaining the size of the foetal head before birth, unless the infant be affected with hydrocephalus, we are often exposed to the error, after extracting the trunk, of bringing to the superior strait a head of excessive volume.

This accident is the most serious for the foetus of all those capable of complicating version. The almost insurmountable difficulties encountered in the extraction of an extended head, when the superior strait is contracted, will often compromise the life of the child by the delay occasioned in its delivery, and also by the manipulations, more or less murderous, to which we are obliged to have recourse.

The extended head may be arrested in the two positions, occipito-pubic and occipito-sacral, which I have admitted in the case of a well-formed pelvis. The accoucheur must endeavour to interfere in the same manner (see figs. 165 and 166); he will succeed sometimes in the occipito-pubic position, but very rarely in the occipito-sacral. In case these efforts should fail, what is to be done? Shall the forceps be applied, as some have recommended, when the head is situated above the superior strait, and the trunk of the foetus filling up the pelvic excavation? Is this even possible? Experience proves that, under these circumstances, the forceps is of no use, for there is not sufficient space in the cavity to permit the instrument to reach the head; and that, even admitting that each branch might possibly be introduced, yet it would not be practicable to unite or articulate them. Certainly this is one of the most embarrassing and painful situations in which the accoucheur can be placed. He sees that the infant is in extreme danger, and he cannot attempt to afford it relief without incurring the hazard of destroying it by the very means he resorts to for its

safety. This situation is, indeed, an unpleasant one, but it must be accepted.

The first indication, in the occipito-sacral position, is to rotate forcibly the trunk of the fœtus with the left hand, so as to bring the face posteriorly, while with the right hand, the fingers of which are introduced into the mouth, we must attempt to flex and extract the head.

We are often, in this case, obliged to be aided by an assistant, who rotates the trunk of the infant, and makes, at the same time, tractions on it proportionate to the resistance. We should be guarded in exercising these tractions on the fœtus, not so much through fear of destroying it—for, in the majority of cases, it has already been sacrificed by the torsion practised on its trunk—but in order not to exhibit the sad spectacle of a violent detruncation, which often covers with ridicule the operator, who falls on the ground with the body of the fœtus in his hands!! Violence should never be suffered to characterize an obstetric operation, no matter what may be its nature. If the section of the neck of the child be necessary, it is far preferable to perform it with a cutting instrument than forcibly to tear the trunk from the head. The soft parts of the mother, too, frequently suffer from these violent tractions.

Unfortunately, as a last resort, the accoucheur will be obliged to have recourse to detruncation, and afterward to the forceps, in order to deliver the mother. M. P. Dubois performs the section of the neck by means of large curved scissors. This operation cannot be completed with two or three cuts, as has been supposed. The scissors can only act by their extremity and by small sections, for otherwise the soft parts of the mother would be exposed to injury.

In order to perform this operation, we should, in the first place, depress the trunk of the fœtus in drawing from above, and the section should be made commencing from before backward. We may, indeed, employ a bistoury, but the scissors appear to me to fulfil more completely the indication in view. The trunk being removed from the pelvic excavation, it is possible then to change the direction of the head, and to remove it in all cases by the forceps or the cephalotribe, if this instrument should become indispensable.

This is an extremity to which the prudent accoucheur will not often be reduced, if he examine closely into the condition of the pelvis before he attempts to act, and be careful to make moderate tractions only during the contractions of the uterus. If, however, the accoucheur sometimes finds himself compelled to resort to this alternative, it is always after the life of the child has been sacrificed by improper attempts at version, and when the pelvis is contracted. The safety of the mother, therefore, is his only care.

I have not mentioned, in this article, shortness of the cord as a complication in version, for I have already treated this subject in detail. The indications, however, are precisely the same, whether this accident complicates version or spontaneous delivery.

ART. III.—CEPHALOTOMY.

Cephalotomy comprises the following operations: 1st, perforation of the cranium; 2d, breaking down the base of the skull.

§ 1. *Perforation of the Cranium.*

This operation is performed with Smellie's scissors: it is the instrument that should be preferred. We may, however, employ a bistoury, or the perforator attached to the extremity of one of the branches of certain forceps; but this latter instrument especially is far from presenting the advantages of Smellie's scissors.

(Fig. 167.) The patient being situated as for the application of the



forceps or version, the accoucheur lubricates properly his left hand, and introduces it entire, except the thumb, into the maternal organs; he then takes the scissors in his right hand, having previously guarded the point with a small ball of wax, and guides them on the palmar surface of the left hand until they reach the head; in order to perforate more readily, he selects a suture or fontanelle, if practicable; but the important point is, to direct the instrument perpendicularly, in order that it may not slip and wound the organs of the mother. If, therefore, it should become necessary to depart from this perpendicular line in his attempt to reach a suture or fontanelle, the accoucheur should at once abandon the idea of perforating in one of these membranous spaces, and should select that portion of the head which presents most directly to the point of the instrument. A few movements of rotation will suffice, together with a slight effort, to overcome the resistance of the bones of the cranium, and the accoucheur will know that he has penetrated the cerebral mass as soon as the resistance ceases. He then separates the branches of the instrument, turns them in different directions, and thus breaks down the brain; the branches are now brought together, and, holding them between the thumb and index finger of the right hand, he again separates them sufficiently to widen the opening as the scissors are withdrawn. The scissors represent a kind of lancet, the external borders of which are cutting. At the moment they are withdrawn from the cranium, directing them cautiously on the left hand, which must remain in the vagina during the whole operation, the scalp should be incised in order to afford a more easy escape to the brain.

It has been recommended, in this case, to throw injections into the cranium, with a view to favour the evacuation of the cerebral mass; but I have satisfied myself that they are entirely useless; they complicate and render more disagreeable an operation, the consequences of which we should, as far as possible, conceal. Thus, after the scissors are withdrawn, if we do not employ injections, the contractions of the uterus, or the cephalotribe, if the degree of contraction should require it, will suffice to bring away the brain, which the accoucheur should receive in a cloth, and carefully remove from the observation of the assistants; while, on the

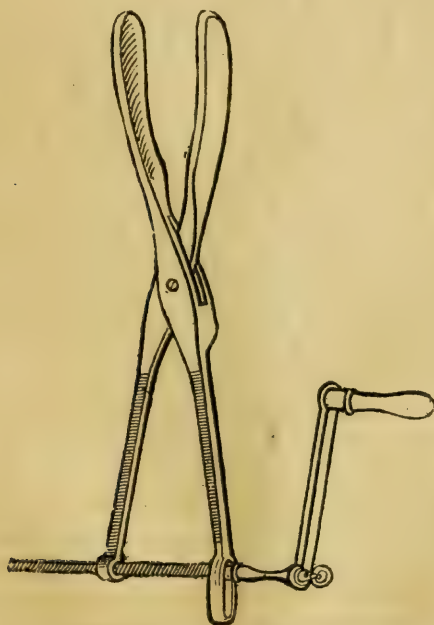
contrary, the water of the injections, mixed with blood and brain, passes abundantly from the organs, and gives to this operation the appearance of barbarity.

If the degree of contraction will permit the spontaneous expulsion of the head after it is reduced, the patient should be covered and removed to her bed, and the delivery of the fœtus committed to nature; whenever this course can be adopted, it will certainly be the most desirable; for the application of the forceps, and still more the cephalotribe, will be accompanied with more or less danger, from which, as far as possible, the patient should be protected. But should the woman be exhausted, or if there be inertia of the womb, we must have recourse to the forceps (see rules for this application when the head is above the superior strait). The instrument, in this case, will be more likely to slip than when the head has not been perforated. It will, therefore, be necessary to bind very accurately the handles of the forceps with a napkin, in order to prevent this accident. If the pelvis measure less than three inches, the cephalotribe must be employed.

§ 2. *The Cephalotribe.*

The cephalotribe, or compressing forceps of the head, invented by M. Baudelocque, nephew of the celebrated accoucheur, is a most precious instrument, which cannot be too positively defended against its traducers. It advantageously replaces all the sharp crotchets, and the entire arsenal of cutting instruments, armed with teeth, &c.; instruments almost as fatal to the mother as to the child, and which, I am happy to say, are completely banished from practice.

(Fig. 168.)



This instrument, composed of two branches, is applied, like the forceps, at the superior strait, on the two sides of the pelvis. In fact, even when it can be applied regularly to the head, it becomes altogether useless, if the size of the head must be reduced.

The important point in this operation is, carefully to guide the instrument into the uterus, and to be well assured that the organs of the mother have not been included within the grasp of the cephalotribe. Its weight, although much reduced since its invention, renders it much less manageable than the ordinary forceps.

The head being seized, the branches must be articulated, and then brought together by turning the manivelle. The firmest and most thoroughly ossified heads readily yield under the pressure of this instrument. As soon as the reduction is effected, the accoucheur should proceed to the extraction with all possible care; for spiculæ of bone frequently pass through the scalp, and may lacerate the maternal organs. To avoid these accidents, the accoucheur must give to the cephalotribe a proper direction; he should endeavour to place the largest diameter of the crushed head in apposition with the largest of the pelvis. For this purpose, he directs the concavity of the borders of the instrument either to the right or to the left, as he may experience more facility in bringing down the head in one or the other direction; he should also introduce the fingers of the left hand, in order to protect, as much as possible, the organs from the spiculæ of bone which may have protruded through the scalp.

Some authors have recommended always to perforate the cranium before applying the cephalotribe; but it seems to me that this precept should not be absolute. In my opinion, we should commence by perforating when we have reason to hope that this alone will suffice; but when we know in advance that we must resort to the cephalotribe, notwithstanding the perforation, there can be no motive in performing two operations when one will be sufficient. In a word, the most solid heads cannot resist the cephalotribe; the scalp is perforated spontaneously, and the brain escapes of itself; this, at least, is what I have always observed in the living female, in the manikin, and in the dead infant. The operation is more rapid, less dangerous for the mother, and is not so repulsive to the assistants; and I believe that the opinion that perforation of the cranium should always of necessity precede the use of the cephalotribe has been advanced with no other object than to make it appear that this instrument is incomplete.

ART. IV.—OPERATIONS ON THE MOTHER.

Thanks to premature artificial delivery and the cephalotribe, operations which were formerly supposed necessary to be performed on the mother for the purpose of extracting the child, are now resorted to only in very rare cases. These operations are symphyseotomy and the Cæsarean section.

§ 1. *Symphyseotomy.*

The section of the symphysis pubis has been advised in cases in which the pelvis measures from three inches and a quarter to two inches and a half; but premature artificial delivery during pregnancy, and cephalotripsy, if, unfortunately, the aid of the accoucheur has not been called for in time to provoke premature delivery, have caused this operation to fall entirely into disuse. Almost as serious for the mother as the Cæsarean section, it does not present the same advantages for the child; the efforts almost always necessary to make on the infant to extract it compromise its life.

In fine, the division of the symphysis pubis does not present such an increase in the pelvis as to enable a fœtus of normal size to pass without injury both to itself and mother.

I do not, for example, speak of a contraction of three inches and a quarter; for the forceps will answer in this case without the section of the pubes; but under this, symphyseotomy offers no advantages.

It is not possible to separate the symphysis more than two inches, which will augment the antero-posterior diameter only four lines; if to this be added the three lines gained by the descent of the parietal protuberance in the separation of the pubes, the antero-posterior diameter will present an increase of seven lines. If this diameter measures three inches, its increase will give it only three inches and a quarter.

It will now be seen that this result will still require considerable effort to be made on the head by means of the forceps.

If, now, the pelvis measured only two inches and a half, its maximum of increase would be three inches one or two lines; and, in this case, the forceps would often prove insufficient, and perforation of the cranium and cephalotripsy would be indicated, notwithstanding the operation of symphyseotomy had been performed: in other words, the mother would have been sacrificed without profit to the child.

In fact, when symphyseotomy will permit the extraction of the child without violence, premature delivery in such cases will prove much more advantageous. If, called in too late, the accoucheur has not been able to provoke delivery before term (the infant being viable), he has only to choose between symphyseotomy and perforation or cephalotripsy. Reduced to this extremity, of seriously involving the safety of the mother without knowing whether the child is alive, or of sacrificing the child with the view of protecting the parent, the accoucheur must take counsel of his conscience. As for myself, the choice would not be doubtful.

Nevertheless, I shall now, in a few words, give a history of this operation, and the modes of performing it.

In 1773, Sigault, at that time a student of medicine, struck with the idea that the abnormal softening of the pelvic articulations rendered parturition more easy, proposed to separate the symphysis

pubis to arrive at the same result. The Academy of Surgery rejected this proposition; but Sigault was not discouraged, and, assisted by Alphonse Leroy, he performed his first operation in 1777. Both mother and child were saved. This success secured for him a number of partisans. The faculty of medicine presented him with a medal, but he raised up against himself numerous and bitter adversaries. The physicians divided themselves into two classes, the one advocating symphyseotomy, the other the Cæsarean section. Much was written for and against; recrimination followed recrimination, and the controversy at last terminated by the general consent that each operation had its own peculiar advantages.

Operation.

Symphyseotomy should not be practised except when the infant is living, and especially where there is no doubt of its viability. When, therefore, auscultation has decided this question, the accoucheur can proceed with the operation, which is simple enough. After evacuating the bladder, the patient is placed as for the application of the forceps, and firmly held by assistants. A sound is introduced into the bladder; it will serve at the same time to evacuate the urine, and direct, during the operation, the meatus urinarius downward and to the right, remote from the cutting instrument. An assistant holds the sound in this situation, while another makes tense the integuments above the pubes. The operator, after having ascertained the precise position of the symphysis, makes an incision, embracing all the soft parts, commencing about half an inch above the pubes, and extending a little to the left, above the clitoris. This incision brings to view the inter-pubic cartilage, which must be cut through with great care, to avoid injuring the bladder. This being accomplished, the bones separate, and if the contractions be energetic, the delivery may terminate spontaneously. In the contrary case, we must have recourse to the forceps. After the delivery, the bones must be brought together, the integuments united by adhesive straps, and the whole maintained in place by a body bandage. If any vessels should be cut during the operation, they must be secured by ligature.

But a multitude of evils follow this operation, and frequently destroy the patient. When she survives, the consolidation of the bones is not ordinarily completed for three or four months; in some instances it never takes place, and the patient cannot walk during the remainder of her life.

§ 2. Cæsarean Section.

The Cæsarean section, or the extraction of the fœtus by means of an incision into the abdominal and uterine walls, should not be performed on the living woman except in cases in which the contraction of the pelvis is so marked as to proscribe the use of the cephalotribe.

This operation may also be practised on a female who has just expired after the period of viability, and when auscultation shows

that the fœtus is still living, and that it is possible to extract it alive.

But if the female should succumb during labour, it would be better, if the condition of the organs would permit, to extract it by means of the forceps, or by version.

How often, after the death of the mother, has this operation been practised; and practised, too, even when auscultation has not detected the pulsations of the fœtal heart?

Some accoucheurs recommend always to perform this operation, whether the pulsations of the heart are heard or not, and even after the lapse of ten, fifteen, or twenty-four hours from the death of the mother, children having survived the death of their parent for this period. There can be no objection to this precept as a general rule of conduct, being always careful to ascertain that the female has positively expired, and careful, too, to perform the operation with as much vigilance as if she were living, for fear that she really were so. When, however, this rule was originally laid down, its utility was undoubted, for at that period there were no certain signs by which the death or life of the fœtus could be established. But we are now, perhaps, not so well convinced of its necessity, since auscultation furnishes the certain means of ascertaining the pulsations of the heart; a means the more infallible, as all the other organs in which life is extinct are in the most absolute repose, so as not in any way to interfere with auscultation.

As for myself, I do not hesitate to state that, unless the friends should urgently desire the operation, I would not perform it, unless I had distinctly heard the pulsations of the fœtal heart. And I should pursue this course for the reason that the death of the mother might be only apparent; and if the operation be performed only ten or fifteen minutes after it was supposed she had expired, her death would certainly be caused on the spot, while, without the operation, she might have been restored to life.

The Cæsarean operation is one of the most serious that can be practised on the living woman: five sixths, at least, die.* With

The Cæsarean section is, undoubtedly, a dread alternative for the accoucheur to choose, but I cannot agree with Dr. Chailly, that its fatality is as great as he represents; nor am I disposed to adopt the opinion, unfortunately too general, that craniotomy is almost always to be preferred to the Cæsarean section. In truth, it needs some nerve, and, for a man of high moral feeling, much evidence as to the necessity of the operation, before he can bring himself to the perpetration of an act which requires, for his own peace of mind, the fullest justification. The man who would wantonly thrust an instrument of death into the brain of a living fœtus, would not scruple, under the mantle of night, to use the stiletto of the assassin. Yet, how often has the fœtus been recklessly torn from its mother's womb piecemeal, and its fragments held up to the contemplation of the astonished and ignorant spectators as testimony undoubted of the operator's skill! Oh! could the grave speak, how eloquent, how momentous, how damning to the character of those who speculate in human life would be its revelations!

Independently of the abuse of this operation (craniotomy), of its unjustifiable frequency, let us for a moment look at its relative fatality when compared with the Cæsarean section.

According to the statistics gathered by Dr. Churchill, among British practitioners, craniotomy is resorted to 1 in 219 cases; among the French, 1 in 1205 $\frac{1}{3}$; among the Germans, 1 in 1944 $\frac{1}{4}$: the average, therefore, of these three nations will be 1 in 896 $\frac{1}{2}$. In 252 cases, 50 mothers died, or about 1 in every 5. As regards the Cæsarean section, the same author states, that since 1750 he has collected 321 operations, from which 149 mothers recovered; and that in 187 cases, where the result is mentioned, 130 children were saved, and 57 lost.

Hence, then we have a calculation showing that in craniotomy, where, of necessity, all

such results, it is difficult to conceive how a practitioner can decide to perform it on a living woman, when, by sacrificing the child,

the children must be sacrificed, one woman out of every five died; while in the Cæsarean section, one mother recovered out of two and a fraction, and the success to the child was certainly most fortunate.

But, again, we only hear of the *deaths* in the proportion of 1 to 5 of women who have been subjected to the hazards of craniotomy; nothing is said of the dreadful lacerations and destruction of the soft parts, which often entail on the sufferer distress and anguish to which death itself would be preferable. I do not believe it is possible to remove a child by embryotomy when the antero-posterior diameter of the superior strait measures less than two inches, without subjecting the mother to severe hazard, provided the child be of the ordinary size. My opinion on this subject is not a speculative one; it is based on repeated experiments made on a wooden pelvis constructed for this purpose; and I am satisfied that, even with the space of two and one fourth inches, all the dexterity which the operator can bring to his aid will be required to protect the mother from serious, if not fatal injury. Authors, therefore, I think, must have laboured under some error on this subject. For example, Dr. Davis states that craniotomy is admissible when the diameter is only one inch; Dr. Burns, when it is one and three fourths; and Dr. Osborne, when it is one and a half inches. I cannot but protest against any such deductions, and, therefore, without hesitation, would prefer the Cæsarean section (if I had certain evidence that the child lived) to any attempt to extract it *per vias naturales*, if the antero-posterior diameter measured less than two and one eighth inches. The object of craniotomy is to save the life of the mother by sacrificing that of the child. This object cannot, in my judgment, be attained without occasioning the most serious results (even admitting she survives the operation) in a contracted pelvis such as is described by Drs. Burns, Osborne, &c.

A case occurred in Philadelphia, unique in its character, and one that is full of professional interest. Mrs. R., twenty-six years of age, was married 16th of May, 1830, and on the 14th of June, 1831, was in labour with her first child. Dr. George Fox was called to her assistance, and finding that there was deformity of the pelvis, requested the counsel of Profs. James and Meigs, and Drs. Lukens, Hewson, and J. R. Barton. It was concluded, after repeated examination, that the antero-posterior diameter did not exceed two inches. "The question arose as to what was to be done. The Cæsarean operation was thought to be attended with so much risk to the mother as almost to be necessarily fatal, some of the most distinguished surgeons being entirely opposed to its performance; and Dr. Physic, who was called upon for his opinion on the propriety of this operation, was decided and positive in his opposition to it; under the weight of such authority, the idea of the Cæsarean operation was abandoned."* It was then determined to perform cephalotomy, and Prof. Meigs agreed to undertake it. Before he commenced the operation, however, Prof. M. conceiving, after farther examination, that "cephalotomy would be attended with as much risk to the life of the mother as the Cæsarean operation, thought it better to call another consultation, to reconsider the propriety of performing the Cæsarean operation."† The consultation resulted in the opinion that the child was dead. Cephalotomy, therefore, was performed. On the 22d of June, 1833, this same female was again in labour with her second child. Prof. Meigs was called in, and performed a second time the operation of cephalotomy. But we are not told that in this case the child was dead; therefore, it is to be presumed it was alive.

On March 25, 1835, this heroic woman was taken in labour with her third child. Dr. Joseph G. Nancrede was her physician; and, after mature deliberation, decided that the Cæsarean section was the only appropriate operation in her case. Dr. Nancrede requested the counsel of Professor Gibson, who concurred in opinion with him. Accordingly, in the presence of Dr. Nancrede, Professor Deweese, Dr. Dove of Richmond, Professor Horner, Dr. Beattie, Dr. William Coxe, Dr. Theodore Deweese, and Dr. Charles Bell Gibson, the distinguished professor performed the operation with entire success, saving both mother and child.

Nov. 5th, 1837, Professor Gibson was summoned to this patient, who was again in labour with her fourth child!! He again performed the Cæsarean section, and with the same success, saving both mother and child. These facts must carry with them their own comment; but it does seem that they establish, without doubt, the truth of the views I have already expressed on the subject of the two operations, craniotomy and the Cæsarean section.

Dr. Richard K. Hoffman, a distinguished surgeon of this city, reported the following case of successful Cæsarean section in the *New-York Journal of Medicine and Surgery* for July 1839; and, from its interest, I take the liberty of transcribing it in his own words.

"Dr. H. was called at 8 P.M., August 12, 1838, by Dr. Cockcroft, Jr., to visit with him a Mrs. Day, at No. 5 Allen-street, then in labour with her first child. He found her a dwarf, four feet high, forty-two years of age; her spine and body seemed of ordinary length, but lying on her side in bed, she appeared to have no legs, the length of her lower extremities not being greater than that of an ordinary thigh, and her upper extremities equally disproportioned. On examination per vaginam, the anterior surface, or what should be the hollow of the sacrum, was felt bulging forward with a regular, smooth, convex prominence that had

* Relation of a Case of Labour, in a Female with deformed Pelvis, by George Fox, M.D., in *North American Medical and Surgical Journal*, No. xxiv., October, 1831, p. 485.

† *Ibid.*

it is possible to save the mother. Thus, when the pelvis measures more than two inches, cephalotripsy should be had recourse to. It

been mistaken for the head of the fœtus at the full time. To prove that the sacrum projected forward, the forefinger was introduced up the rectum, and found to pass anteriorly to the projection; at the base or promontory, the sacrum approached so near the symphysis pubis as to admit with difficulty the passage of two fingers between them, reducing that space to about an inch and a quarter. Laterally there was more space, but not in the antero-posterior diameter. The head of the child could be reached by the finger through this narrow aperture, lying above the brim of the pelvis, and its outlines could be distinctly felt through the parietes of the abdomen, pressing on and projecting forward over the os pubis. A catheter was introduced, and the bladder found nearly empty. Drs. Belcher, Cockcroft, and the reporter concluded that there was no resource but the section of the womb. Dr. A. L. Anderson, so well known for his obstetric skill and experience, was called in, who thought that, by care and very patient waiting, it would be practicable to deliver by embryotomy. Dr. Hoffman was unwilling to resort to this, from the conviction that, with a space not wider than an inch and a half at most, with the rectum behind, and the bladder in front, together with the relaxed os tincæ in the way, and the head hardly within reach of the finger, it would be almost impracticable, and would endanger wounding the bladder or rectum, and lacerating the cervix uteri. He, however, went home to procure instruments, and requested his neighbour, Dr. John Watson, to accompany him to the patient, who, after an examination of the case, decided in favour of the Cæsarean section. Dr. Cockcroft (whose patient she was), and Dr. Belcher, who had seen her in consultation, agreeing in this decision, and requesting Dr. Hoffman to perform the operation, the patient having then been in labour twenty-four hours, Dr. H. proceeded as follows: placing the patient on her back, on a cot, with the thighs flexed on the pelvis, an incision from six to seven inches in length was made through the skin from near the os pubis to the umbilicus, in the course of the linea alba. Being much stretched by the distended uterus, the integuments receded to the extent of three or four inches as they were separated by the scalpel, and were easily divided by slight touches of the knife. On dividing the exposed peritoneum, some fluid gushed out, which it was thought might be urine from an over-distended bladder, though the catheter had been introduced two hours before. To remove any apprehension of this kind, that instrument (a long, flexible one) was again introduced, and very little urine was found in the bladder, showing that the fluid came from the cavity of the peritoneum. The uterus, thus laid bare, was divided, by one stroke of the knife, about five inches in length; the head of the child, the occiput presenting, was at once protruded through the incision, and, with a little assistance, was delivered, followed by the shoulders, &c. It evinced signs of life by gasping and moving the arms. Dr. Belcher took it in charge. With the umbilical cord as a guide, Dr. H. then introduced his left hand through the incision into the uterus (which was not felt to contract), and, on gently pressing the placenta, it was found to be detached, and was removed.

"There was not more hemorrhage than usually attends a natural delivery. The small intestines, which had protruded to a considerable extent, were carefully replaced, and the wound brought together by six or eight sutures, not including the peritoneum. Adhesive straps, compress, and bandage were then applied. The pulse was good, and did not flag during or after the operation; twenty drops of solution of sulphate of morphia were given and repeated during the night.

"13th. Second day, 7 A.M., nine hours after the operation, patient had slept, and had passed a tolerably good night; felt comfortable; had not voided urine; pulse 120; some heat of skin; no distension of abdomen; an enema of infusion of flaxseed was prescribed. 5 P.M., nineteen hours after operation, had voided urine twice. The enema, which had been repeated, had not come away; abdomen more tense, and somewhat tympanitic, tender to the touch, and pain darting from one lumbar region to the other; pulse 104, and strong. She was freely bled, and fifteen grains of calomel were ordered, to be followed at bedtime by castor oil; hop fomentations to be applied to the whole abdomen. 14th. Third day, abdomen tumid and tender; no discharge from bowels had taken place; an enema, containing ol. terebinth., was then given, and was followed by a free evacuation of the bowels; eighteen leeches were then applied to the abdomen, and the fomentations continued. 15th. Fourth day, venesection repeated to ten or twelve ounces, and fomentations persevered in. 16th. Sixth day, wound was dressed, leaving the sutures, union being incomplete; pulse 110; ordered castor oil.* By confining her to a very small quantity of light nourishment, by the occasional use of aperients or enemata, and by fomentations assiduously applied to the abdomen, the soreness and uneasiness were gradually removed, and on the 2d of September, three weeks after the operation, the patient was sitting up in a chair, 'feeling smart,' with a good appetite, and her bowels regular. The wound had closed, with the exception of a very small space at its lower part; a probe introduced into this could be felt at the os tincæ, showing that the incision into the uterus was not entirely closed. Four weeks after the operation, the patient (who was a very estimable and industrious little woman) set out on her journey home on Long Island, at a distance of thirty miles, with the wound completely closed, and in good health. In October following, she was heard of as continuing in good health.

"The child was deformed in the lower extremities, and did not long survive its delivery."
—Ed.

* We here annex the account of the progress and the result of the case, as subsequently furnished by D. H., for the purpose of giving a continuous view of it.

will be in vain objected that the use of the cephalotribe is murderous, when the pelvis measures but a trifle over two inches.

To this it may be replied, that this instrument, even in these conditions, presents a much better chance of life to the mother than the Cæsarean section; and if the cephalotribe has not yet rendered all the service it will one day show itself capable of doing, it is because accoucheurs are not sufficiently familiar with its use, and because, in most cases, it is not employed until the female, already exhausted by a prolonged labour, and by attempts of every description to relieve her, is about expiring.

While the Cæsarean operation, on the contrary, is, and should always be performed under favourable circumstances, such as will rarely be absent when the fœtus is living.

Time alone will decide this question; the invention of the cephalotribe is too recent to enable us to compare the results which it furnishes with those of the Cæsarean section.

But I am fully of opinion that the period will arrive when the generation which succeeds us, judging without prejudice, will render proper justice to the cephalotribe, and proscribe the Cæsarean operation in cases in which, by destroying the fœtus, it will be possible to save the mother.

At present, I will not practise the abdominal and uterine section, in order to extract the fœtus, except when the pelvis is so contracted as to render the mutilation of the fœtus impossible. But when the contraction is less than two inches, the Cæsarean operation must be resorted to: this is the only resource left to the mother; and if the operation be performed at the proper time, the child too may be saved.

As soon as the necessity of this alternative is made manifest, it is important not to delay it until the protraction of the labour has compromised the life of the fœtus, for in this case we should risk sacrificing both mother and child, a most melancholy result. All the efforts of the accoucheur should be directed to extracting the child alive, as the mother will almost certainly perish.

Unfortunately, we are often called too late to perform this operation at an advantageous period of labour.

But if the accoucheur should have been sent for at the commencement of the labour, and more particularly if he have attended the patient during the last few days of her pregnancy, she may be prepared for the operation by baths, bloodletting, &c., &c., and the moment favourable for its performance may be selected. The time of choice is that in which the neck of the womb is sufficiently dilated to afford a ready passage to the fluids which will escape during and after the operation, the ovum being still intact. This latter precept, not to rupture the membranes before operating, is of great importance. The distension of the organ facilitates the operation, and especially the retraction of the uterus, after the discharge of the liquid. Formerly, it was recommended to rupture the membranes, in order to oppose the escape of the amniotic fluid into the peritoneum; but this effusion can be easily prevent-

ed by an assistant accurately compressing with his hands the two sides of the abdomen.

The apparatus for the operation consists of two bistouries, one convex, the other probe-pointed, and with a narrow blade; of forceps, ligatures, curved needles, threaded with waxed ligatures; of small bandages, adhesive plaster, straight silver needles, a large piece of agaric, pledgets of lint smeared with cerate, soft lint, a linen band, compresses, a body bandage; and, finally, warm and cold water, vinegar, and fine sponges; and, at every hazard, a pair of forceps. This apparatus being properly arranged, and an assistant being charged with the duty of handing the instruments and different dressings to the operator, and another with sponges, the patient is placed on a bed somewhat elevated, as in the application of the forceps: she is held by the assistants. One assistant steadies with his two hands the uterus on the median line; this precaution will also prevent the effusion of fluids in the peritoneum. Finally, another assistant places his hand on the fundus of the womb, with a view to keep the intestinal mass above, and oppose its interposition between the uterine and abdominal walls.

The operator then makes with a convex bistoury, on the median line, the first incision, which includes the integuments and sub-cutaneous cellular tissue, beginning a little below the umbilicus, and extending within an inch and a half of the pubes. This incision, therefore, should extend from four and a half to five and a half inches. If the short stature of the female should prevent this length of incision, limiting it to the points designated, it should be prolonged a little to the left of the umbilicus, and above. The surgeon then divides, layer by layer, the aponeurotic planes of the linea alba, and thus reaches the peritoneum. He makes a slight opening in this membrane, through which he passes, on the index finger of the left hand, a probe-pointed bistoury, with which he extends the incision.

The operator, after this, incises the uterus, layer by layer, becoming more and more cautious, until he arrives at the surface of the ovum, which he likewise incises; then, with the index finger of the left hand and the probe-pointed bistoury carried through this opening, he completes the incision of the uterus, passing towards the superior angle of the wound.

The fœtus must then be immediately extracted by the part it presents; the uterus contracts, the placenta is separated, and the accoucheur extracts it through the incision, as also the membranes, which must be rotated, in order to give them more solidity.

The finger should then be introduced into the mouth of the womb to ascertain that no foreign body is there.

The uterus, in contracting, closes the wound which has been made in its walls, and, therefore, this incision does not need any particular dressing. The wound in the abdominal walls is brought together by means of a figure of 8 suture, made with silver needles passed into the lips of the incision, and around which is placed a



ligature. These needles should be situated about one inch and a quarter from each other, and each should have an independent ligature. Between each suture there should be a strip of adhesive plaster, then lint, and the whole to be kept in place by compresses and a body bandage.

The treatment consists in combating the accidents that may manifest themselves. At the end of four or five days the lint should be renewed, without touching the needles or adhesive strips; it will not be until the fifteenth day that, the cicatrization being complete, we will be enabled gradually to remove the needles. Unfortunately, it is most generally from the cadaver that we remove the first dressings.

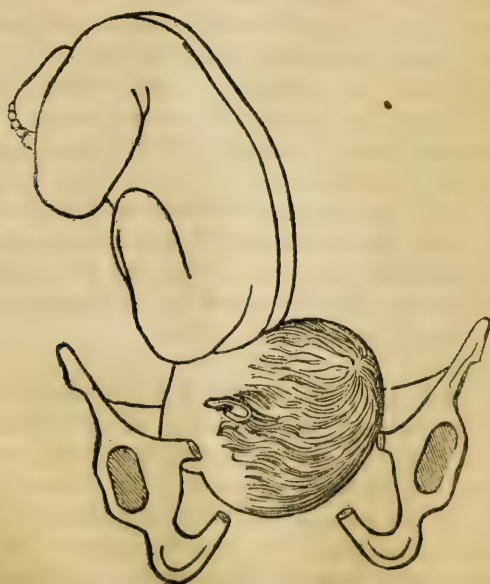
TITLE III.

PRESENTATION OF THE FACE.

If I were to follow the order of frequency, I should place immediately after the presentation of the vertex that of the pelvic extremity; but I have thought it more useful not to separate the presentation of the face from that of the vertex, in order to make more striking the analogies between these two presentations, which, moreover, are merely two subdivisions of the presentation of the head.

Before the time of P. Portal, the opinion was generally received that the presentation of the face was not susceptible of spontaneous

(Fig. 170.)



termination; it was he, therefore, who first laid down the principle, that not only could the expulsion, in this case, be terminated by nature alone, but that this presentation is favourable to the mother and child, and should be placed in the category of natural labours. At a later period, Deleurye also adopted this doctrine; but Deventer, Ræderer, and almost all authors who preceded Madame Lachapelle, rejected it. Baudelocque himself, Gardien, Maygrier, although regarding delivery by the face as possible by the spontaneous efforts of nature, have recommended to endeavour to prevent this presentation or to change it, on the assumption that it is one of those cases presenting more or less danger.

Impressed with the facility with which delivery by the face is most usually terminated without any serious complication, Madame Lachapelle stated as a principle, that the face presentation should be confided to nature. She predicates her opinion upon the fact that, in seventy-two cases of delivery by the face, forty-two terminated favourably.—(*Pratique des Accouchemens*, t. i., p. 369.)

Velpeau observed six cases in which the children were born alive. MM. Nægele, Stoltz, and Moreau agree in opinion with Madame Lachapelle. Finally, M. P. Dubois, in eighty-five cases observed by him at La Maternité, was obliged to interfere eight times; twice because the arm was about to descend simultaneously with the face, five times on account of the resistance of the external genital organs, and once because the fœtus was dead. I have myself observed several cases at La Clinique, in which face presentations terminated favourably for both mother and child. On one occasion only, M. P. Dubois was obliged to apply the forceps, in a right posterior mental position, incompletely reduced.

In truth, if we merely consult experience, and consider the diameters concerned in the descent and delivery of the face and vertex, which have nearly the same dimensions, we shall naturally be induced to admit the spontaneous termination as possible, provided always the chin passes under the pubic arcade; for it would be otherwise if it passed into the concavity of the sacrum. Thus, although I concur with Madame Lachapelle as to the manner in which things take place in the majority of cases, yet I cannot consent to class this delivery among natural labours; I should fear, in doing so, that I might inspire young practitioners with too great security; and as this expulsion, although most usually spontaneous, frequently compromises the life of the fœtus, and calls for the interference of art, it has appeared to me more rational to comprise it among labours that are spontaneous, and often natural.

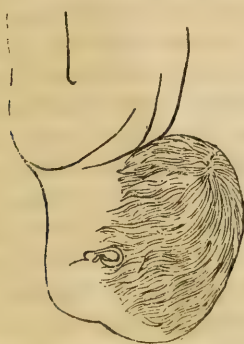
§ 1. Causes of Face Presentations.

Obliquity of the uterus has been regarded by most accoucheurs as the principal cause of the presentation of the face. According to Deventer and Gardien, this presentation would be secondary to a presentation of the vertex, and this substitution is accomplished in this way: in consequence of the inclination of the uterus, the axis of this organ and that of the superior strait not being in rela-

tion, the uterine contractions, acting on the fœtus, would tend to engage it in the axis of this viscus, that is, obliquely, and not perpendicularly, according to the axis of the superior strait. Under these circumstances, the fœtus would rest against the border of this strait, the occiput would be thrown backward, and the face take the place of the vertex.

M. P. Dubois is of opinion that things do not pass in this manner ordinarily. According to him, these presentations are almost always primitive, and not occasioned by the obliquity of the uterus. In eighty-five cases, he has not met with a single well-characterized instance of obliquity. Moreover, how can it be supposed that the parts of the fœtus could become arrested at the superior strait, when it is remembered that this strait is lined by soft and yielding organs, and that the uterine walls present to the fœtus a smooth plane, lubricated and contractile, on which it glides into the strait? M. P. Dubois admits, therefore, that these presentations are primitive at labour, and that yet they are the result of the deflexion of presentations of the vertex—a deflexion occasioned, most probably, by the active movements of the fœtus, and the following is his explanation: “At an indeterminate period of gestation, the chin may separate from the chest; if the fœtus remain in this attitude until full term, it will find itself definitively placed in this position at the commencement of labour by the rupture of the membranes and the contractions of the uterus.” However, we cannot positively assert that uterine obliquities may not sometimes cause this presentation.

(Fig. 171.)



(Fig. 172.)



(Fig. 173.)



(Fig. 174.)



Whatever may be the cause of the presentation, it is evident that it is the result of the presentation of the vertex extended. The order in which the positions of this presentation are classed prove this fact: the right posterior mento-iliac position (fig. 171), the first of the face, corresponds to the left anterior occipito-iliac (fig. 172), the first of the vertex. The left anterior mento-iliac (fig. 174), the second of the face, corresponds to the right posterior occipito-iliac (fig. 173), the second of the vertex, &c., &c.

Diagnosis.

I have already remarked, in the classification of presentations and positions, that the face may present at the superior strait, either full or inclined, in four different ways. Thus, in the full presentation, the front of the face is felt at the orifice; in the varieties of malar presentations, one or other cheek is felt; a large portion of the forehead in the frontal variety; and, finally, the chin and a small part of the neck in the mento-cervical variety: the frontal variety is the most frequent, the malar the least so, and the mento-cervical is rare.

As to the positions, I have also shown that, although the chin may be in relation with all the points of the superior strait, yet the face generally assumes but two principal positions: the right posterior mento-iliac, the left anterior mento-iliac. These two positions have been sufficiently proved to enable us to establish their order of frequency; but such is not the case with the two opposite diagonal positions. They are so rare, that it is only in the way of analogy that they can be admitted. In fact, if the vertex should present in the diagonal position, in order to descend readily at the superior strait—and it would be still more so with the face, the diameters of which exceed somewhat those of the vertex—it should be solicited to assume this situation. Thus, I cannot admit that the transverse positions are the most frequent, and I think that authors have been led to suppose that the extent of the transverse diameter rendered the transverse positions more frequent, simply because they have measured this diameter in the dry pelvis, which is longer, instead of viewing it in a pelvis covered with the soft parts, in which case this transverse diameter is smaller and less favourable than the oblique.

§ 2. Diagnosis of the Full Presentation.

The diagnosis of the presentation of the face is not, in general difficult; it is, however, more so before the rupture of the membranes, especially if they be tense. The finger of the accoucheur, in this case, most usually reaches the forehead, the face not being yet completely extended, and then he may suppose it to be a presentation of the vertex; sometimes, even, the part is so elevated that he cannot reach it.

After the rupture of the membranes, at the commencement of labour, the orifice being but slightly dilated, only a small portion of the forehead is felt, together with the orbits and nose; but in

proportion as the dilatation increases, and the movement of extension is completed, the mouth and chin also descend in the orifice. The diagnosis then becomes evident; but very often, when the face has remained for some time at the superior strait, these characters are somewhat concealed by the tumefaction which they undergo, and it might be possible to mistake the face for the presence of a pelvic extremity; for only a large tumour is felt, partly solid, and partly soft, in which prominences and infractuositities are distinguished. We should, under these circumstances, endeavour to recognise the presence of the nose, because the nostrils will prevent our confounding it with any other part. The nose, in this case, is situated in a fissure formed by the tumefaction of the cheeks, and it is this disposition which may cause us to believe that the breech presents; and the mouth should be searched for, which cannot, without great carelessness, be mistaken for the anus. The buccal cavity, much wider than the anus, presents the alveolar processes, and likewise contains within it the tongue; the anus, on the contrary, contracts on the finger of the accoucheur, and the coccyx may be distinctly recognised; add to this that, in this case, the finger is always covered with meconium. Finally, the osseous contour of the orbits, and the presence of the chin, will remove all doubt.

§ 3. *Diagnosis of the Position.*

The direction of the nostrils at the commencement of labour, and that of the chin when the dilatation permits us to feel this part, will serve to determine the position. Thus, if the nose or chin be felt to the right and posteriorly, it is a right posterior mento-iliac position; to the left and in front, it is a left anterior mento-iliac position, &c., &c.

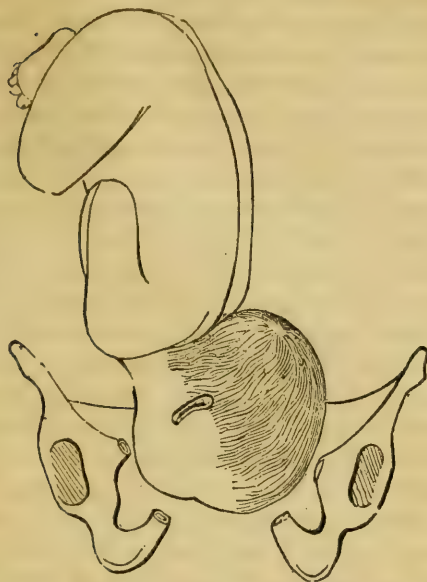
ART. I.—MECHANISM OF SPONTANEOUS DELIVERY.

§ 1. *Mechanism of Spontaneous Delivery in the Full Presentation of the Face.—Right Posterior Mento-iliac Position.*

The mechanism of spontaneous delivery by the face may be divided, like that of the vertex, into five periods for the full presentation.

Before the rupture of the membranes, the face is moderately extended, and may become more so; in this situation, it presents at the superior strait by a diameter intermediate between the mento-occipital and mento-bregmatic, the length of which is four inches seven or eight lines (fig. 170). This diameter is parallel to the left oblique diameter of the superior strait, the chin corresponding with the right sacro-iliac symphysis. The bi-temporal diameter is parallel to the right oblique diameter; and the cheek, which is in front, is more readily accessible, whether, as I have said in speaking of the vertex, it be owing to the anterior inclination of the face, or to that of the plane of the superior strait.

(Fig. 175.)
Extension, First Period.



But after the rupture of the sac, the face completes its extension (first period, fig. 175), and then presents a more favourable diameter, the mento-bregmatic, which measures from three and a quarter to four inches, and by which it descends (second period). Then, when the face has penetrated the excavation, sometimes only in proportion as it enters, it undergoes a movement of rotation, by which the chin, brought to the right and in front, is soon conducted under the ischio-pubic branch, and, finally, directly under the symphysis pubis (third period). This rotation of the chin in front almost always occurs, no matter how remote it may be from the pubes, and it is only as an exception when it passes into the concavity of the sacrum.

(Fig. 176.)
Descent and Commencement of Rotation, Second Period.



Finally, the chin soon passes the symphysis pubis, and descends towards the mons veneris; the head then flexes, and the front of the trachea is under the pubic arch, and from the anterior commissure of the perineum we see successively disengaged the forehead, the bregma, and the occiput (fourth period). The front of the trachea and the lower portion of the symphysis pubis serve as a central point for all the diameters, which successively measure the

(Fig. 177.)

Complete Rotation, Third Period.

Delivery, Fourth Period.



(Fig. 178.)

Profile View of Delivery.



(Fig. 179.)



(Fig. 180.)



delivery of the face: these diameters are, the trachelo-frontal (three and a half inches), trachelo-bregmatic (three and three quarter inches), trachelo-occipital (four inches one or two lines).

If now we compare these diameters with that of the inferior strait, the antero-posterior, which measures four inches four or five lines, we can easily understand the facility with which the face passes in this mento-anterior position.

(Fig. 181.)

External Rotation, Fifth Period.

The fifth period, that of external rotation, is the same as in the presentation of the vertex.

§ 2. *Mechanism of Spontaneous Delivery in the other Positions of the Face.*

The mechanism of spontaneous delivery in the other positions of the face is exactly the same as in the preceding, except that the movement of rotation, which carries the chin under the pubes, is the more extended as the chin is situated more posteriorly; and we may establish, as a general rule, that, in the positions of the face, whatever may be the point at the upper strait with which the chin corresponds, the latter will almost always descend in front, and the delivery will be spontaneous; but should the chin remain posteriorly, which, happily, is very rare, the delivery will be far from terminating so favourably.

§ 3. *Mechanism of Spontaneous Delivery in the Inclined Presentations of the Face, or Varieties of Presentation.*

Malar Varieties.—Diagnosis and Mechanism.

When the face is inclined at the superior strait, one or other cheek occupies more particularly the centre of the orifice: if it be the cheek which is in front of the pelvis, we often feel an ear behind the pubes; and the other parts of the face, the nose and mouth, are towards the sacrum. If it be the cheek which is posteriorly that occupies the orifice, the nose and mouth are nearer the anterior portion of the pelvis.

What I have said of the varieties of the presentation of the vertex is equally applicable to those of the face. During the first contractions of the uterus these varieties correct themselves, the head becomes righted, and the full face occupies the superior strait; in a word, the variety gives place to the full presentation, and the labour is terminated as favourably as if this variety had not presented. It is precisely the same with the malar varieties: they can even descend, like the parietal varieties of the vertex, without previous righting.

Frontal Variety.—Diagnosis and Mechanism.

In this variety, the full forehead occupies the superior strait; the

(Fig. 182.)



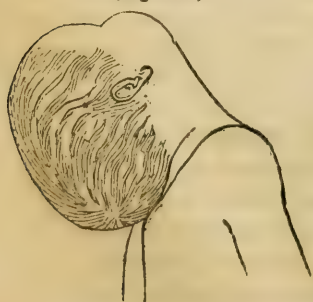
finger can feel the orbits on one side and the anterior fontanelle on the other. This variety of presentation is very frequent, and it corrects itself, like the others, immediately after the rupture of the membranes. The first period of delivery, extension, takes place; the face, which presented itself imperfectly extended, now extends, and occupies, in full, the superior strait. It is rare, although it may occur, that the face, instead of becoming completely extended, flexes, and thus a presentation of the vertex is substituted spontaneously

for one of the face.

Mento-cervical Variety.—Diagnosis and Mechanism.

The chin is placed almost in the centre, and a small portion of

(Fig. 183.)



the neck of the fœtus occupies the orifice with it. The mouth may also be reached; but by degrees the face descends, and the mouth, nose, orbits, and a portion of the forehead unite with the chin, and descend into the superior strait, the neck having ascended on the opposite side.

It is very unusual for these substitutions of presentation not to be accomplished, and that art is obliged to interfere.

As to the position, it remains the same; for, whether the presentation be full or inclined, the chin is still either on the right or the left.

ART. II. — ANOMALIES IN THE MECHANISM OF SPONTANEOUS DELIVERY.

All the anomalies which I have mentioned as being capable of manifesting themselves during the expulsion of the foetus in the presentation of the vertex, are equally met with in delivery by the face; but things do not pass as happily in the latter as in the former presentation.

§ 1. *First Period, Deflexion or Extension.*

Thus, the movement of flexion may fail in the presentation of the vertex (a circumstance not very rare), and yet this will not prevent the descent of the head, for, as I have already remarked, this flexion is only useful, and not indispensable to the descent. In the presentation of the face, on the contrary, if the period of extension, which is analogous to flexion of the vertex, be not accomplished, the descent is singularly retarded, and may sometimes not be effected, and art is obliged to interfere; but it is very rare that extension does not occur, for it has for its object to substitute a favourable for an unfavourable diameter. (See *Manipulations in Case of Anomaly.*)

§ 2. *Second Period, Descent.*

The descent in this presentation, as in every other, cannot fail of itself; when it does not take place, it is because some circumstance interferes with its execution, such as a want of extension, deformity, &c., &c.

§ 3. *Third Period, Rotation.*

As has been seen in the mechanism of spontaneous expulsion, the rotation of the chin most usually is effected in front; but the rotation, in this case, may very readily be incomplete, and the face then descends diagonally without much difficulty. Madame Lachapelle has noticed this descent take place transversely. But if the rotation of the chin in front should fail entirely, and it remain, therefore, in relation with the sacro-iliac symphyses (which is very rare), the accoucheur will almost always be obliged to render assistance. The spontaneous expulsion, however, may still occur, but in virtue of certain conditions, and by means of a very complicated mechanism.

Descent in the Mento-posterior Position remaining such.

In this situation, the occiput is supported behind the symphysis pubis, and the chin is arrested by the sacrum; the face presents, therefore, in the antero-posterior diameter of the inferior strait, which measures only four inches four or five lines, by its occipito-mental diameter, measuring five inches. This will render delivery

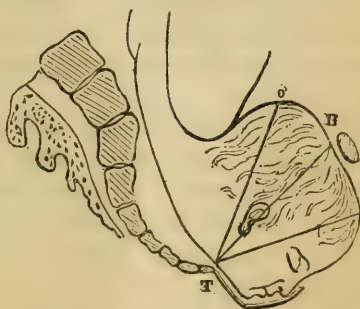
impossible unless the head should change its situation, which may take place in two ways: the labour may terminate, the face continuing to present; or, by a movement of flexion, the vertex may replace the face.

(Fig. 184.)



In the former case, the neck of the infant elongates under the influence of very energetic contractions; a small portion of the chest also descends in the superior strait, and the occiput is turned backward. These various combined movements enable the chin to advance diagonally, gliding along the concavity of the sacrum as far as the sacro-sciatic ligament, which it passes by pushing it posteriorly. The chin being thus situated in the concavity of the perineum, the trachea rests on the point of the sacrum. It is not the occipito-mental diameter which now presents at the moment of the disengagement, for, if it were, the disengagement could not be effected; but it is the trachelo-occipital, which allows the vertex to pass under the symphysis pubis in presenting, successively, to the cocci-pubic diameter, the trachelo-frontal (three inches and a half), trachelo-bregmatic (three inches and three quarters), and trachelo-occipital (four inches and a few lines).

(Fig. 185.)



After the vertex has thus passed under the symphysis pubis, the face, having remained in the concavity of the perineum, which it has pushed backward, soon disengages, by a movement of progression, in front. It will be seen that the diameters which measure the expulsion of the face beyond the osseous parts in this instance, are the same as in the preceding case; so that we are not to ascribe the

difficulties of this delivery to the length of these diameters, but rather to the circumstances which render possible the previous disengagement of the chin, in order that the occipito-mental diameter may be avoided. In fact, for the chin to traverse the entire concavity of the sacrum, in order to pass the sacro-sciatic ligament, it becomes necessary that the neck of the infant should elongate considerably, in order that a portion of the chest may descend in the superior strait, and that the contractions of the uterus be very energetic, and the perineum not too resisting.

These are the conditions, rarely met with, which constitute the difficulty of the expulsion. They cannot exist except when the pelvis is very capacious, or the fœtus very small. Thus, whenever the fœtus and pelvis present their ordinary dimensions, delivery, in most cases, will be impossible without the aid of the accoucheur.

In the second case, the face, having arrived in the pelvic excavation, presents at the inferior strait its occipito-mental diameter, which cannot pass this strait; then the chin, instead of approaching the perineum, as in the preceding instance, becomes more remote from it, ascends towards the sacro-vertebral angle, and becomes flexed on the chest, which permits the occiput to descend and pass under the pubes. In a word, the occipito-anterior presentation of the vertex replaces in the excavation the presentation of the face.

But this circumstance can only be explained by admitting that the fœtus is very small and the pelvis very large; for, in order that the head, being extended in the excavation, that is to say, having its occipito-mental diameter perpendicular, may become flexed, it becomes necessary that this diameter should move in the excavation. Now, this diameter measuring five inches, and the excavation four and a half inches, this flexion cannot be accomplished, unless there should be a diminution in the diameters of the head, or an increase in those of the pelvis.

§ 4. *Fourth Period, Delivery.*

The fourth period of delivery, like that of the descent, cannot fail of itself; it is prevented by other circumstances, such as resistance of the parts, inertia, &c., &c.

Sometimes, in the secondary mento-anterior position, that is, when the chin corresponds with the posterior portion of the symphysis pubis, the head may become flexed in the excavation, and the chin, instead of passing under the pubes, ascends behind the symphysis pubis; the forehead is placed under the arch, and the delivery terminates as in the occipito-posterior position of the vertex. (See fig. 99.) I had occasion, in January, 1841, to observe this mechanism in a female at La Clinique. The primitive position had been a *right posterior mento-iliac*, which was completely reduced to an *anterior*. The head of the fœtus was small, and the pelvis capacious, which explains this anomaly during the period of descent.

§ 5. *Fifth Period, External Rotation.*

Finally, the fifth period, or, that of external rotation of the head and internal of the shoulders, is subject to the same irregularities as that of the vertex.

ART. III.—PROGNOSIS FOR THE MOTHER.

I remarked, in the first article of this chapter, that delivery by the face should be regarded as spontaneous in the majority of cases; but, as not being always natural, for the labour is sometimes longer, more painful for the mother, and dangerous for the child than in delivery by the vertex; it requires also more frequently the interference of art. In fact, as has already been observed, the anomalies, in the different movements the face should execute during its progress, have a much more serious influence than when the head presents flexed; and the right or left mento-posterior position, remaining such after its descent, or which becomes altogether posterior, constitutes a most grave accident; but it is absolutely untrue, as some authors contend, that the primitive right or left mento-posterior position is more serious than the anterior; for the mento-posterior positions almost always are reduced to the secondary anterior (that is, after the descent); and as, moreover, they are the most frequent, as every day's practice demonstrates, they give rise to the largest proportion of spontaneous deliveries.

If the labour be occasionally longer than in the presentation of the vertex, it is not because the face presents at the superior strait diameters unfavourable to the descent, for I have shown precisely the contrary; the trachelo-bregmatic, measuring three and three quarter to four inches at most, corresponds with the oblique diameter of the pelvis, which measures four inches; but it is because the face, which is at the superior strait, accommodates itself badly by its inequalities to the regular and uniform contour of this strait, and remains separated from the uterine orifice by a mass of fluid, instead of resting, as the vertex does, on this orifice, and thus favouring its dilatation.

As to the movement of rotation, it is executed with as much regularity as in delivery by the vertex, no matter how remote the chin may be from the symphysis pubis. The delivery, however, will be much more serious when, instead of coming in front, the chin passes posteriorly, for, in this case, the woman will exhaust herself in vain efforts; and whether the accoucheur is obliged to interfere, or the expulsion be spontaneous, which is exceedingly rare, the prolonged sojourn of the head behind the symphysis and on the rectum may occasion vesico and recto-vaginal fistulæ. Moreover, at the moment the head passes the external parts, the perineum, notwithstanding every care, may be lacerated.

As to the delivery at the inferior strait, when the chin passes under the pubes, it is accomplished as rapidly as that of the occiput. Experience demonstrates this fact, and it is evident, although the contrary has recently been maintained.

ART. IV.—PROGNOSIS FOR THE INFANT.

A protracted labour, when the face occupies the superior strait, may occasion cerebral plethora of the fœtus, and all the grave consequences resulting from it. The same thing may occur in the mento-anterior rotation, in consequence of the too prolonged sojourn of the anterior part of the neck of the infant under the pubes. The compression of the jugular veins, in this case, compromises the life of the child once in ten or twelve deliveries. Unfortunately, it is difficult to affix a limit beyond which delay is dangerous. We see, indeed, fœtuses remaining for a long time in this attitude without injury; others, on the contrary, die after a short and easy labour. According to Madame Lachapelle, if the infant move its tongue and lips, we must remain inactive; but if these motions cease, we must then act. It would be well to add to these indications the evidence furnished by auscultation, in order that we may be assured of the state of the fœtal circulation.

Procidencia of the cord is a grave complication which frequently accompanies this presentation, the superior strait not being entirely occupied by the part which engages.

The tumefaction of the face should be taken into account in the prognosis; it also occurs, although in a less degree, in the other presentations; it is occasioned by a sero-sanguineous afflux, which a few days will suffice to dissipate. It is the same with the tendency which the head has to be thrown backward, in consequence of its forced position in traversing the pelvis.

 CHAPTER I.

THE CONDUCT OF THE ACCOUCHEUR IN DELIVERY BY THE FACE

THE accoucheurs of the last century, and Madame Lachapelle herself, in the commencement of her practice, recommended to convert the presentation of the face at the superior strait into the presentation of the vertex. For this purpose, before the descent of the face, the hand, the palm of which corresponded with the occiput, was introduced between the border of the superior strait and head; then the four fingers, being fixed in the form of a crotchet on the occiput, bring this part down to the superior strait.

In giving this direction, those authors contended that delivery by the vertex is as favourable as possible to the fœtus, while, by the face, it terminates spontaneously only in cases in which the chin corresponds to the front of the pelvis, and often, even in this case, the life of the child is sacrificed.

They likewise allege in favour of their opinion, that the right and left posterior mento-iliac positions always giving rise to the direct

mento-posterior, it becomes necessary to prevent this rotation of the chin posteriorly by acting on the vertex, for the mento-posterior position will always require the interference of art, and is more or less fatal to the fœtus and mother.

It would be easy for me to demonstrate that these fears are, for the most part, without foundation; and that, if the accoucheur were formerly often called upon to render assistance, and the life of the child and mother were frequently compromised in this presentation, it was because practitioners were too hasty in disturbing the march of nature, instead of permitting her to proceed quietly in her work, and thus establish the true prognosis of this species of delivery.

It is also evident that these erroneous notions have prevailed, because authors have attributed to presentation of the face accidents which have resulted directly from the attempts made to change this presentation.

There is no doubt, however, that delivery by the vertex is much more favourable to the mother, and especially to the child, than by the face. I have established this fact in the prognosis; *for the mother*, in presentation of the face, the labour is more protracted and dangerous, if certain anomalies should manifest themselves during the progress of the labour. *For the infant*, besides the dangers incurred by these anomalies in the most favourable circumstances, death takes place once in ten or twelve cases; and if rotation of the chin occur posteriorly, the sacrifice of the child is almost certain.

Thus, if, in acting on the vertex instead of the face, we can obviate all these inconveniences, without substituting others equally or still more serious, and if, in most cases, this operation were practicable, we should certainly have recourse to it. But, in the first place, in admitting that we could succeed in bringing down the vertex instead of the face, there would be no similarity between a labour when the vertex had been acted upon forcibly at the superior strait, and one occurring in a primitive presentation of the vertex. In fact, when the vertex presents of itself, and the rupture of the membranes occurs, the orifice is completely closed up by the presenting part, and the amniotic fluid escapes but partially during the entire labour, and, consequently, the fœtus is not exposed to the immediate compression of the uterus; this favourable condition does not exist when the vertex has been brought down by the accoucheur. The introduction of the hand, and the attempts made to grasp the occiput, permit the whole of the liquor amnii to escape. Moreover, this discharge of the fluid may bring down a loop of the umbilical cord below the head of the fœtus. This accident is rare in the primitive presentation of the vertex, because, as I have remarked, the vertex closes up the orifice; but it often takes place during these attempts at cephalic version, at the moment the hand seeks to push up the face and bring down the vertex. If procidentia of the cord should occur, we should attempt its reduction, in order to prevent compression; and if we

do not succeed in placing it above the superior strait, we shall be obliged, with a view of protecting the fœtus from the consequences of this accident, to perform pelvic version or have recourse to the forceps, depending on whether the head has descended more or less; operations which are not without inconvenience to the child. One or both arms may likewise be brought down to the superior strait at the same time with the vertex. Hence the necessity of attempting their reduction, and, in case of failure, to resort to version, or the application of the forceps, according to the particular circumstances. These attempts at reduction, extremely painful in themselves, aggravate the serious condition in which we find the mother and child placed.

But the dangers of this operation to both mother and child are not the only reasons which should make us proscribe it; the difficulties in its execution are very great, and those accoucheurs who have attempted this operation can fully appreciate its embarrassments. The warmest advocates of this method, even Baudelocque himself, have acknowledged numerous failures. Madame Lachapelle, at the time her mind was imbued with these false notions with regard to the presentation of the face, also very frequently experienced insurmountable difficulties. The experience of M. P. Dubois has likewise given the same results in cases in which he was induced, in consequence of pelvic deformity, to attempt to change the presentation. It may, indeed, be affirmed that, in presentations of the head, it is sometimes possible to place nature in the channel she should pursue; but we can rarely overcome these departures from her standard, except in changing the presentation by pelvic version.

One circumstance only, strictly speaking, will render the reduction of the presentation possible. It is this: when, on rupturing the membranes at the moment of introducing the hand, we find the face movable at the superior strait; but even in this case we will sometimes encounter considerable difficulty. Again, it would only be when the superior strait is deformed that it would be admissible to practise this operation in order to save the fœtus the dangers of an irregular application of the forceps when the head is extended. But if recourse be had to the operation after the rupture of the membranes, the contractions of the uterus will almost always oppose its execution. Most usually, therefore, the attempts at reduction will be useless in two ways: 1st. Either there will be complete failure, after reiterated and long-continued efforts; and after having occasioned great suffering to the patient, we will be compelled to abandon the face at the superior strait; and, under these circumstances, the labour will be much more unfavourable than if we had done nothing.

2d. Or these attempts at reduction may prove unavailing, because the vertex, once brought down, may be again removed from the superior strait, and the face take its place, notwithstanding all the efforts of the accoucheur to maintain it in position. This ef-

fect is the result of the natural tendency of this presentation to occupy the superior strait after it has once taken place there.

If, now, instead of resorting to this operation, we permit the presentation of the face to continue, the rotation of the chin in front will be executed in the great majority of cases, no matter what may be the point of the superior strait with which the chin corresponds, and the delivery will, as regards the mother, be nearly as favourable as in the expulsion by the vertex; less favourable, however, for the infant, for its life is sacrificed once in ten or twelve times. This spontaneous delivery, however, will present it a better chance than the operation, for, in the latter case, the child succumbs once in seven or eight times. In addition, the mother will be spared the pains consequent upon these attempts, and the accoucheur the difficulties and disappointment of failure.

But the partisans of this method, who believe, for the most part, that the mento-anterior or transverse positions are the only ones which are reduced to the direct mento-anterior, and that the right or left mento-posterior, on the contrary, less frequent than the former, are necessarily changed to the direct posterior, insist that, in the right or left posterior mento-iliac position, we should have recourse to cephalic version, in order to prevent the mento-posterior rotation, much more serious than all the dangers connected with the operation they recommend. My reply is, that experience proves that the primitive mento-posterior positions are the most frequent, that the anterior rotation of the chin occurs as readily in these positions as in the anterior, and that the chin very rarely passes into the concavity of the sacrum. Madame Lachapelle has never met with an instance of this kind. And that, moreover, to prevent this posterior rotation, which probably would not take place, we are not justified in attempting, at the superior strait, an operation which will often endanger the safety of the child, and which is very painful for the mother.

I will even add that, in admitting, as authors contend, that the direct mento-posterior position is a necessary consequence of the right or left primitive posterior mento-iliac, it is not by cephalic version that we are to prevent this posterior rotation, but by pelvic version, which is much less protracted, easier, and less painful, and which is more favourable both to mother and child. It is true that, during the operation of this pelvic version, the same accidents which complicate cephalic version may manifest themselves; but the difference is very great, for the feet of the infant being seized in pelvic version, it may be immediately protected from the consequences of these accidents in proportion as they occur; an advantage not possessed by cephalic version, where we are obliged to abandon the head as soon as it is brought to the superior strait.

In conclusion, we should not interfere with the presentation of the face at the superior strait, when even in a mento-posterior position (for this is the most commonly met with), because experience has shown, in our day, that the delivery will be spontaneous in most cases, and natural under many circumstances, and that we

only aggravate the condition of the mother and child in operating at the superior strait when the labour is not complicated by any accident; and this fact must be kept constantly in view, that if, for a long period, it was supposed to be necessary to change this presentation, it is because authors have attributed to it the difficulties and accidents which result only from their own rash attempts to save the mother and child from the consequences of these accidents; and it must also be remembered that it is more rational to confide this expulsion to the efforts of nature.

In most cases, therefore, the duties of the accoucheur will be limited to supporting the perineum; but, in this case, it must not be forgotten that the anterior portion of the neck, at the moment of the delivery, rests on the border of the pubic arcade, and that too much force must not be employed in this support, for fear of increasing the compression of the jugulars.

If, indeed, in consequence of certain anomalies during the progress of labour, after the face has passed the superior strait, the chin should remain posteriorly and to the right, or pass entirely behind, we shall then be under the necessity of doing the best that circumstances will permit. I shall speak of these indications in the following chapters.

Accidents which may occur during the Progress of Labour, when the Face presents.

The accidents capable of calling for the assistance of the accoucheur in the presentation of the face, from its engagement in the superior strait until its final passage through the inferior strait, are the same as in the presentation of the vertex, and require the same treatment.

Again, these complications being much more serious in the presentation of the face, require more prompt action. The presence of the face, too, at the superior strait indicates certain modifications in the means to be employed.

In the first place, the accoucheur should always prefer version to the forceps, whenever this operation is possible, for the application of the forceps may result much more seriously to the child when the head is extended (face presentation), than when it is flexed (vertex presentation), one of the blades of the instrument being almost invariably applied to the face when the application is irregular. Secondly, when some accident manifests itself, the face occupying the superior strait, it will be necessary to interfere earlier than in the presentation of the vertex, in order to prevent the descent of the head, and the too violent contraction of the uterus; circumstances which, rendering version impossible, will oblige us to have recourse to the forceps.

For the accidents capable of retarding or preventing delivery, and likewise for the complications foreign to labour, and requiring the particular attention of the accoucheur, and sometimes his interference, as also for those which may compromise the safety of mother or child, the reader is referred to what is said under the head of *Vertex Presentations*.

CHAPTER I.

DIFFICULTIES OCCASIONED BY ANOMALIES IN THE MECHANISM OF LABOUR.

THE various anomalies during the different periods of labour, have a much more alarming influence in presentation of the face than in that of the vertex, nature being, in the latter case, generally sufficient of herself.

ART. I.—ANOMALIES OF THE FIRST PERIOD, DEFLECTION.

As was remarked in presentation of the vertex, the descent of the flexed head may very readily take place without previous flexion; and if this flexion occur, it is only to facilitate the descent, and not because it is indispensable. It is not the same, however, with deflection or extension in the presentation of the face. Without the accomplishment of this first period, the descent cannot be effected; thus, when extension does not take place, art must interfere.

The accoucheur should endeavour to draw the chin to the centre of the superior strait; and if this be impossible, it will be necessary to perform pelvic version.

ART. II.—ANOMALIES IN THE SECOND PERIOD OF DESCENT.

This period cannot fail of itself; adventitious circumstances alone can oppose its accomplishment; such as, the anomaly in the first period, inertia of the uterus, excessive size of the head, contractions of the pelvis, &c.

ART. III.—ANOMALIES IN THE THIRD PERIOD OF ROTATION.

This is one of the gravest complications which can possibly occur in presentation of the face. In fact, rotation of the chin forward is absolutely necessary, for without it spontaneous expulsion cannot take place; therefore, the chin must be brought in front, which can only be effected by the forceps.

ART. IV.—ANOMALIES IN THE FOURTH PERIOD OF DELIVERY.

This fourth period cannot fail of itself; inertia, resistance of the soft parts, &c., &c., can alone prevent it.

ART. V.—ANOMALIES OF THE FIFTH PERIOD, EXTERNAL ROTATION.

(See *Vertex Presentations*.)

CHAPTER II.

MECHANICAL OBSTACLES TO DELIVERY.

(See *Vertex Presentations*.)

For all the complications in this chapter, the indications are precisely the same as in the presentation of the vertex. The varieties of presentation alone present some peculiarities worthy of note.

ART. I.—VARIETIES OF PRESENTATION.

Varieties of Malar Presentations.

It is very rare that we are obliged to interfere for varieties of presentation in general. What I have said with regard to the presentations of the vertex is equally applicable here. Thus, in the first place, in those cases in which one or other cheek occupies the superior strait (malar varieties), as was stated in the article *Spontaneous Delivery by the Face*, the malar varieties almost always right themselves during the first contractions of the womb, and are succeeded by the full presentation. Now, if the righting should not take place, the face may still descend inclined as far as the excavation, and the righting is not accomplished until it reaches the inferior strait, simultaneously with its delivery; if, however, which is very rare, one or other malar variety persist in presenting, and the descent do not take place, the accoucheur must assist. Unfortunately, the manual righting, the bringing the face to the centre of the superior strait, is not more practicable in this case than in the parietal varieties of the vertex. Moreover, it will be impossible, in most cases, to bring the vertex into the position of the face by fixing the fingers upon the occiput (see *Conduct in Delivery by the Face and Cephalic Version*), for we must delay a certain period in order to test the insufficiency of the uterine contractions, which will ordinarily suffice to effect this righting; and, by this time, the energies of the womb will have become so violent, that, in the majority of instances, they will render useless all attempts at reduction. Pelvic version, even in these cases, will not always be possible; and the application of the forceps will, unfortunately, be too often the only resource. Nevertheless, every legitimate effort should be made to practise cephalic or pelvic version, in order to avoid the danger of applying the forceps on the face. I repeat, however, that these presentations are rare, and the necessity for interference is still more so

Variety of Frontal Presentation.

The variety of frontal presentation, as has been remarked in the article *Spontaneous Delivery by the Face*, is the most frequent,

and is almost always converted into the full presentation; the head presents, in this case, demi-flexed by an unfavourable diameter (four inches seven to eight lines); but the first period of spontaneous delivery, the complete extension, which rarely fails, is accomplished, and the face, thus perfectly extended, occupies in full the superior strait. If the frontal variety should continue without becoming reduced, the descent will not be possible, unless the head is small and the pelvis very large. Two methods have been recom-

(Fig. 186.)



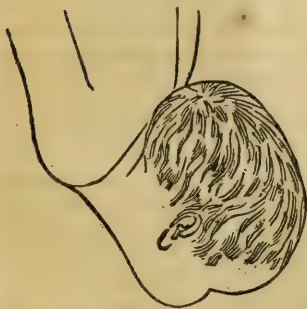
mended in this case in order to determine the descent: the first consists in flexing the head, with a view to bring down the vertex, by endeavouring to cause the chin to ascend and approximate the chest, which is next to impossible. The second method may sometimes prove successful: it consists in supporting the forehead during the contraction, in order that the face may descend, or in bringing down the chin with two fingers in the form of a crotchet. Madame Lachapelle has often succeeded in this way; often, too, she has failed. In case of failure with these partial manipulations,

should the contraction of the uterus oppose version, we must have recourse to the forceps.

Mento-cervical Variety of Presentation.

Finally, the mento-cervical variety, that in which the chin and a

(Fig. 187.)



small portion of the neck are felt at the orifice, is reduced, like the preceding, to a full presentation; it is, nevertheless, very rare. Should this reduction not take place (which is still more rare), we should endeavour to depress the face, by means of two fingers introduced into the mouth, while with the other hand placed on the iliac fossa, to which corresponds the occiput, we endeavour to cause the head to descend. This operation is difficult; and if the face does not descend,

or cannot be depressed, we must act as in the preceding varieties.

ART. II.—DEFORMITIES OF THE PELVIS.

Although a deformity of the pelvis at the superior strait does not exclude the spontaneous termination of a face presentation, yet we cannot disguise the fact that this termination must necessarily be rare, and that, when it does occur, the infant is in great danger. Thus, pelvic version being proscribed in this case, M. P. Dubois advises to bring down the vertex in the place of the face, if this be possible, before applying the forceps, in order to save the child from the dangers of an application which cannot but be irregular. (For the other indications, see *Presentation of the Vertex*.) If the

inferior strait be contracted, the forceps alone will be applicable, such, also, will be the fact when the face is retained by the resistance of the external genital organs.

CHAPTER III.

GENERAL RULES FOR THE APPLICATION OF THE FORCEPS IN THE PRESENTATION OF THE FACE.

THE general rules for the application of the forceps in face presentations are the same as for the vertex; as for the particular rules, they, too, are the same, with some few exceptions, and I shall now enumerate them, commencing, as I did for the vertex, with the most simple, and then passing to the more complicated cases.

ART. I.—PARTICULAR RULES FOR THE APPLICATION OF THE FORCEPS WHEN THE HEAD IS IN THE PELVIC CAVITY.

Whatever may be the cause requiring the application of the forceps, this application will vary according to the position of the head. The rules for the use of this instrument when the head is in the cavity, the chin corresponding to the anterior half of the pelvis, are the same as in the presentation of the vertex, the occiput corresponding also in front; they vary according to the positions.*

* Although it is undoubtedly true that the fœtus, under ordinary circumstances, can be delivered by the spontaneous efforts of nature when the face presents, yet it should not be forgotten that, in this form of presentation, as soon as the active efforts of the womb prove insufficient to effect the delivery, much delay on the part of the accoucheur may result fatally to the child, and, at the same time, inflict serious injury on the mother. I have repeatedly been called to cases of face presentation (and from the number I have seen, I should not be inclined to consider them as rare as has been supposed), in which the child was suffering seriously from the excessive pressure exerted on it by the contractile power of the uterus, and where immediate delivery was indicated.

In June, 1840, Dr. Oatman sent for me in haste to visit Mrs. J., who had been in active labour for twenty-four hours. Her pains from the commencement had been expulsive, and she suffered from their constant and violent recurrence. The membranous sac had ruptured three hours after the commencement of the labour; but the mouth of the womb had previously become well dilated. Dr. Oatman, on making a vaginal examination, ascertained that the face presented; the efforts of the womb caused the head to descend, but its progress was extremely slow; after the face had pressed partially into the excavation, it became arrested, and notwithstanding the continued and powerful action of the womb, it made no farther progress. The mother's strength was yielding under the influence of these repeated and fruitless contractions, and the life of the child was in great peril from the pressure exerted on it. Dr. Oatman having decided in his own mind that artificial delivery was absolutely indicated, requested my attendance. On arriving, I found the condition of things as described above, and at the request of the doctor proceeded to deliver Mrs. J. with the forceps. I encountered but little difficulty in the operation, and in a few moments presented her with a fine living daughter. A few hours' delay in this case would have rendered this agreeable result impossible.

In September, 1842, Dr. Graham sent for me in consultation in the case of a young married lady in labour with her first child. She had been in labour six hours before the doctor visited her, and when he arrived the mouth of the womb was but slightly dilated, and the pains had not been severe. He left her, and was again sent for in the evening, about fourteen hours from the commencement of her labour. The orifice was then dilated to the size of a four-shilling piece, and he recognised the presentation to be that of the face. The pains continued with more or less force during the night, but although the uterus became completely dilated, there was very little progress in the delivery. The patient was exceedingly frail, and became very much exhausted. It was at this time that I first saw her, being twenty-eight hours

§ 1. *Secondary Mento-pubic Position.*

Thus, in the direct mento-pubic position, the concavity of the borders of the forceps should regard the lower portion of the symphysis pubis, one branch to the left, the other to the right, as in the corresponding occipito-pubic position of the vertex; after the same manner, direct tractions should be made, combined with the lateral motion; then, raising the instrument in front of the symphysis pubis, a movement of flexion is imparted to the head, which enables the forehead, bregma, and occiput to pass the anterior commissure of the perineum.

§ 2. *Left Anterior Mento-iliac Secondary Position.*

If I were to follow the order of frequency of face presentations, I should, immediately after the mento-pubic, speak of the right mento-iliac; but the application being precisely the same in the cases in which the occiput and chin regard the same points in the anterior half of the pelvis, I shall describe first the mode of applying the instrument in the left anterior mento-iliac position, corresponding with the left anterior occipito-iliac. The concavity of the borders of the instrument being directed to the left and in front, will be in relation with the chin, which is to be brought under the pubes; the pivot branch is introduced first posteriorly and to the left, the mortise branch in front and to the right, and, by a movement of rotation, the concavity of the borders and the chin are brought under the pubes, and the delivery is effected as in the preceding case.

§ 3. *Right Anterior Mento-iliac Secondary Position.*

In this position, the application is the reverse of the preceding; the pivot branch is placed above and to the left, the mortise branch below and to the right; the chin must be brought under the pubes, and the delivery will be the same.

§ 4. *Secondary Transverse Positions.*

In the transverse positions, we should direct the concavity of the borders to the left, if the chin be on this side; and in order to seize the head as nearly as possible on the sides, the pivot branch should be carried quite into the concavity of the sacrum, the other under the pubes, if this be possible, &c.; if the chin correspond to the right, the concavity should be directed to this side; the pivot branch above under the pubes, the mortise in the hollow of the sacrum, &c. This reg-

from the period her labour commenced. I found the face partially descended in the excavation; it was very tumid from the pressure it had undergone, and the patient herself in a state of great exhaustion. The indication here no one could mistake; and at the request of Dr. Graham I introduced the forceps, and delivered her of a living child. The mother had an average convalescence, but died six months afterward from consumption.

I might cite other cases illustrating the necessity of prompt and effective action on the part of the accoucheur, when, from the inability of nature, both mother and child would be more or less compromised by unreasonable delay. I cannot too impressively inculcate the fact that we are frequently deprived of exhibiting the real benefits of judicious interference, by unjustifiable procrastination. Why delay until the child is sacrificed? why hesitate to act the moment nature shows that she is incompetent to discharge her duty? There is a broad distinction between that prompt and opportune action by which two precious lives are saved, and a rash and meddlesome midwifery, which looks not to consequences.—Ed.

ular application, even in the excavation, is not always possible ; often we will not be able to apply the instrument except in the diagonal position, and the curvature will not be entirely in relation with the chin. Under these circumstances, we will be obliged, in order to bring the chin from under the pubes, to increase somewhat the rotation of the forceps.

§ 5. *Right or Left Posterior Secondary Mento-iliac Positions.*

Will the rules for the application of the forceps be the same for the face when the chin regards the posterior half of the pelvis, as for the vertex in the corresponding positions ?

I will remark, in the first place, that it is extremely rare that the face, having entered the excavation, remains in the diagonal position, right or left posterior mento-iliac ; it is even more rare for the chin to pass entirely backward. Madame Lachapelle has never observed this position, and regards it as impossible. It must, therefore, be very rare. However, there are some examples of it mentioned by authors.

I will suppose, therefore, that the chin, sliding on the right or left sacro-iliac symphysis, remains in this position, or that some accident manifests itself ; the application of the forceps then becomes indispensable. In this case, should the chin be brought forward, or carried into the concavity of the sacrum ? Before proceeding farther, we must return to the presentation of the vertex, and examine why, in this presentation, we should bring the occiput under the pubes when it corresponds in front ; why, on the contrary, it must be carried posteriorly when it corresponds with this portion of the pelvis, by acting on the forehead, which is brought under the pubes. It is because, when we apply the forceps in the excavation, the trunk of the fœtus is steadied by the contractions of the uterus, and, by imparting a movement of rotation on the occiput, which is posteriorly, with a view to bring it in front, most commonly the head alone would be rotated, while the trunk would remain immovable and the neck contorted. This does not take place in spontaneous delivery, in which the head and trunk execute the same movements, preserving nearly their natural relations. This torsion of the neck in the application of the forceps, when it exceeds the fourth of a circle, being capable of compromising the life of the fœtus, we should abstain from bringing the occiput in front. In fact, the delivery in the direct occipito-posterior position, if cautiously managed, is not of a nature to endanger either the life of the fœtus or the soft parts of the mother. And, moreover, the occiput can be brought in front only by a very irregular and difficult application of the forceps.

Would the delivery progress as favourably in the presentation of the face, if, fearing torsion of the neck, we were to conduct the chin posteriorly ? Certainly not. If the chin be retained posteriorly, to the right or to the left, and if we carry it entirely backward, or if it assume this situation itself, the case will be fatal to the child, and the soft parts of the mother, and even her life, seriously involved.

Would it not, under these circumstances, be wise to conform to the precepts of Smellie, and bring the chin forward, notwithstanding the

inconveniences connected with the torsion of the neck of the infant? This, at least, is the advice of Madame Lachapelle, and she holds this language: "*The chin, under no pretext whatever, should be carried and delivered posteriorly; such practice would only result in insurmountable obstacles, and cause the death of the infant.*" But also, regarding the application of the forceps in this case as very difficult, she prefers version whenever this operation is practicable. "If by chance," she observes, "a circumstance which my experience causes me to regard as impossible, I should find the chin turned entirely backward towards the sacrum, and the infant was presumed to be living, I believe I should make every effort to reach the feet, *even if the head were in the lower part of the excavation, and partly passed the uterine orifice.*"* This alternative appears to me preferable to the direct tractions, and to the method of Smellie. If the head, however, had entirely escaped through the orifice, we should then be compelled to select between the two modes of applying the forceps, for version is not to be thought of."

We can add nothing to these wise precepts; but supposing, in this case, version being impossible, we resort to the forceps, how is the instrument to be applied? The face is in the excavation, and the chin corresponds with the right or left sacro-iliac symphysis. If I employ here the same rules as in the vertex, I would bring the forehead under the pubes, and the chin in the concavity of the sacrum; and, in order to disengage the face, I would be obliged to flex the head in the excavation, by depressing the forceps to bring the occiput under the symphysis pubis; and I have already sufficiently established the fact that this delivery is impossible with a foetus at full term in a pelvis which has only its normal dimensions; for, in order that the head may

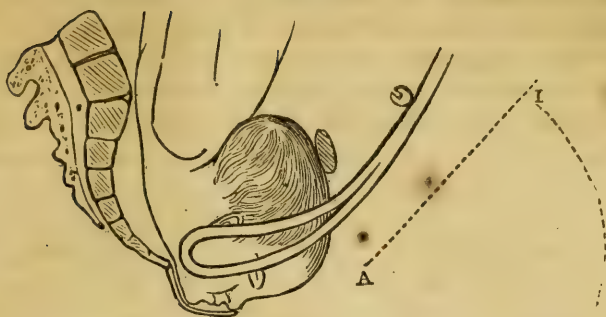
(Fig. 188.)



become flexed after it has reached the excavation in a state of extension, it will be necessary that the occipito-mental diameter, measuring five inches, should move in the excavation, all the diameters of which are four inches and a half; or the head being once seized, with a view to disengage it, I should proceed by a movement of elevation and direct traction, until the chin, which I would direct towards one of the sacro-sciatic ligaments, by inclining the forceps of this side, had passed this ligament. The trachea rests on the point of the sacrum.

* With all the respect I entertain for the opinions of that extraordinary woman, Madame Lachapelle, on subjects connected with obstetric science, yet I am compelled to dissent from her in the principle which she here so emphatically lays down: "*I should make every effort to reach the feet, even if the head were in the lower part of the excavation, and partly passed the uterine orifice.*" This is a rule of practice dangerous to the mother, often fatal to the child, and hazardous to the reputation of the accoucheur. It is a precept which surprises me the more, considering the high source from which it emanates. To attempt to push the head into the womb after being "*low in the excavation, and partly through the orifice.*" would, in the first place, subject the mother to the severe hazard of rupture of this organ and, secondly, it would almost certainly involve the safety of the child, in consequence of the

Fig. 189.)



And then, by a movement of depression and repulsion posteriorly, I would disengage gradually the occiput from the pubes, the chin pushing the perineum downward and backward; then, with the aid of a slight direct traction, I would deliver the face, which remains fixed on the perineum; this latter traction, in most cases, will be useless. But delivery in this way is truly painful, and dangerous to both mother and child.

Let us now examine what will be the course of things, if, in the same position, we attempt to bring the chin forward, and what method must be pursued.

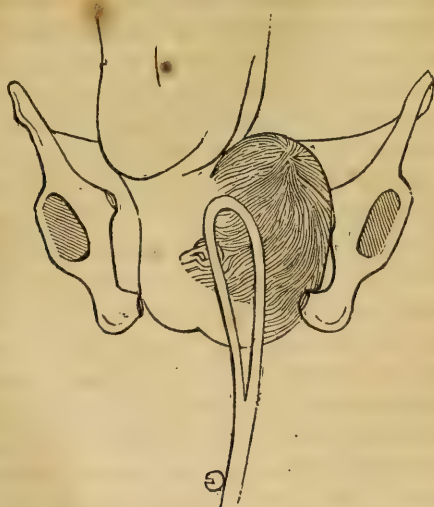
In the first place, it is rare that the chin is exactly in relation with the sacro-iliac symphysis; the neck, in this case, experiences great difficulty in measuring the posterior wall of the excavation; the chin will be solicited to approximate the anterior part, and it will then be found near the extremity of the transverse diameter. It was in a case of this kind that I saw M. P. Dubois bring the chin under the pubes. He found it sufficient, in order to effect the disengagement of the chin, to incline the concavity of the borders of the forceps on the side opposite to that with which the chin corresponded. If even the chin were in relation with the sacro-iliac symphysis, it would be still necessary, for the purpose of affording some chance to the child and protecting the mother, to bring the chin forward. Farther, I would conform to this precept if the chin has passed quite posteriorly in the concavity of the sacrum.

But I have already established as a principle, in the general rules for the application of the forceps, that we should always place the concavity of the borders of the instrument in correspondence with the part which we wish to bring in front; this part is the chin, and it is posteriorly; therefore, I should direct this concavity backward, which is contrary to the rules of art. (See *Vertex*.) Now, what is to be done? Shall we, after the example of Smellie, employ a straight forceps, or admit a mento-transverse instead of a mento-posterior, and apply the instrument as in a transverse position? if the chin be to the right, introducing the pivot branch first, and conducting it, as nearly as possible, under the symphysis pubis, and the mortise branch in the

force necessary to return the head and bring down the feet. If I may be permitted to state a principle on this subject, I would say, *whenever artificial delivery is indicated, if the head be low in the pelvic excavation, and entirely or even partially through the orifice of the womb, there must be no election between version and the forceps; the latter must always be resorted to.*—ED.

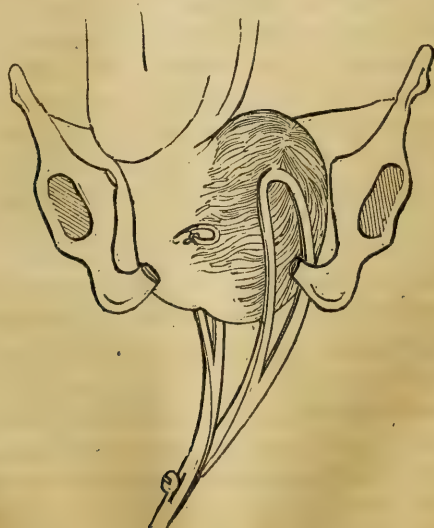
concavity of the sacrum? The contrary of this, if the chin be to the left. I suppose the most common position, *right posterior mento-iliac*; the head being once seized, the chin will not be found entirely in relation with the concavity of the border of the forceps; it will be somewhat more posteriorly, and then, when the movement of rotation will

(Fig. 190.)



be complete for the forceps, that is, when the curvature is entirely under the symphysis pubis, the chin will only be behind the cotyloid cavity; and, in order to bring it under the pubes, we must increase the rotation of the forceps so that the concavity of the borders, at the moment of delivery, regards the opposite cotyloid cavity. It must, however, be understood here, as in all irregular applications of the forceps, that it will be necessary, should the parts be too resisting, to disarticulate the instrument in order to apply it again more regularly; or, if there should be uterine contractions, commit the expulsion to the nat-

(Fig. 191.)



ural efforts. Finally, the rules pointed out above must be conformed to (*Presentation of the Vertex*).

It is rare, as was remarked with regard to the vertex, that we can apply one branch entirely under the symphysis pubis, even in the excavation; and we can only place the forceps diagonally, and, unfortunately, on the face and occiput; then, after the movement of rotation, which must be increased as much as possible in order to bring the chin very near the pubes, the instrument should be disarticulated, and reapplied in the diagonal position, and thus complete the rotation of the chin and its delivery. It will be the same if the forceps have been applied on the sides of the pelvis. Finally, two successive applications will become absolutely indispensable if we desire to bring in front the chin, which is quite posteriorly. The first application must be made as diagonally as possible in order to bring the chin transversely; the second, made in the same direction, conducts it under the pubes, and, always increasing slightly the movement of rotation, the delivery is achieved. These methods appear to me much preferable to those by which the head is disengaged in the direct mento-posterior position; for they only endanger the life of the child by the torsion of its neck, and even in this case, it may be hoped that the trunk will participate, if not in totality, at least in part, in this movement of rotation imparted to the head, and that, if the torsion of the neck should occur, it may not exceed the fourth of a circle. Madame Lachapelle cites, under these circumstances, cases in which children were born alive with the chin resting on the back; and they were extracted in the mento-anterior position with almost as much facility as in the occipito-anterior of the vertex; while the violent tractions necessary to make on the head, in order to draw the chin to the extremity of the sacrum, always compromise the life of the foetus in consequence of the compression experienced by the head, but more particularly from the forced extension of the vertebral column, and the lesions of the spinal marrow resulting from it. These energetic efforts, too, which are often long continued, while they contuse and lacerate the parts of the mother on which the vertex and chin have rested for a considerable time, cause also a rupture of the perineum, more or less extensive, during the passage of the head, notwithstanding every precaution. This rupture may sometimes extend to the rectum; and these accidents may not only endanger the life of the mother, but expose her to infirmities (vesico and recto vaginal fistulæ) which strike at her very moral existence.

ART. II.—PARTICULAR RULES FOR THE APPLICATION OF THE FORCEPS WHEN THE FACE IS AT THE SUPERIOR STRAIT.

When the face is detained at the superior strait, we should insist on pelvic version; and it is only when this operation is impracticable that we should resolve on the application of the forceps. We should employ every means to enable us to apply the branches regularly on the sides of the head, for fear of endangering the life of the child, by placing one of the branches on the face. But, unfortunately, these precepts, which are the same as when the face is in the excavation,

excellent as they are, cannot be followed at the superior strait; and most generally, no matter what may be the consequences, the application will be very irregular, as in the presentation of the vertex: one branch is placed to the left of the pelvis, and the other to the right, without any regard to the position. Direct tractions are made in the axis of the superior strait, and as soon as the descent is effected, the delivery must be conducted in the same way as when the face is in the excavation.

ART. III.—PARTICULAR RULES FOR THE APPLICATION OF THE FORCEPS WHEN THE FACE IS MOVABLE ABOVE THE SUPERIOR STRAIT.

In this case, version being possible, it must be preferred to the forceps; but if a pelvic deformity should interfere with the employment of this means, we must endeavour, before applying the forceps, to bring, by means of the hand, the vertex in the situation of the face; or, at least, to turn the chin forward, if it correspond to the right and posteriorly, as is usually the case. In either case, the application will be much more favourable for the fœtus. But, unhappily, the difficulties to be encountered in executing these precepts are very great; and we shall, therefore, often be obliged to apply the forceps to the face, regardless of the consequences of this application.

In conclusion, nature generally suffices in presentation of the face; therefore, we should not be too eager to manipulate at the superior strait, either for the purpose of substituting for this presentation that of the vertex or pelvic extremity. But the anomalies in the progress of the labour require, much more frequently than in the presentation of the vertex, the intervention of art; and the means to be employed, in this case, are less innocent, especially to the fœtus, than in vertex presentations.

If it be possible, we should attempt version; and if the application of the forceps be the only resource, we should not hesitate to bring the chin in front, with whatever point of the pelvis it may correspond.

Version in Presentation of the Face.

The rules for extraction by the pelvic extremity are exactly the same, whether the vertex or face occupy the superior strait. (See *Version*.)

TITLE IV.

PRESENTATION OF THE PELVIC EXTREMITY.

M. P. DUBOIS, as may be seen in his synoptical classification of presentations and positions, has united under the same denomination of presentation of the pelvic extremity, the four breech presentations of

the ancient authors, viz., the complete pelvic extremity, the hips, the knees, and feet.

In fact, whether this extremity be composed of all its parts, or whether they be separate, that is, whether the breech, knees, or feet present alone, or simply one foot or one knee, the other being on the abdomen, spontaneous delivery is effected precisely in the same manner. Thus, I shall unite them all in the same description, not omitting, however, so far as diagnosis and prognosis are concerned, to establish the difference which exists between these various modes of presentation.

(Fig. 192.)



Like the presentation of the vertex and face, the pelvic extremity does not always present in the same position at the superior strait; it may be inclined in four different directions: thus, at the commencement of labour, we may feel at the orifice one hip (iliac variety), a part of the sacrum (sacral variety), the anterior part of the pelvic extremity (anterior variety).

These varieties disappear as soon as the pelvic extremity rights itself and begins to descend, and have but little influence in modifying the mechanism of spontaneous delivery; they do not deserve to be mentioned, except as regards the diagnosis.

Again, it will be readily understood that, on account of the mobility of the feet and knees, it is impossible to distinguish the varieties of presentation of the breech properly so called, when the feet and knees present; and the varieties can only be appreciated in the complete presentation of the extremity, or in that of the hips. Two principal positions have been admitted by M. P. Dubois: the first, left sacro-iliac; the second, right sacro-iliac (the sacrum regarding the left or the right).

Finally, in the left sacro-iliac position, the sacrum is almost always directed in front; in the right sacro-iliac position it regards the sacro-iliac symphysis.

The positions of the left oblique diameter are the most frequent, and in this respect we find a perfect analogy between the presentation of the vertex and that of the face.

This presentation, much less frequent than that of the vertex, has been observed by M. P. Dubois only eighty-five times in twenty thousand labours, but it is much more common than that of the face. As to the relative frequency of these different modes of presentation, it is as follows: in eighty-five cases of the presentation of the pelvic extremity, the breech is observed fifty-four times, the feet twenty-six, the knees once.

§ 1. *Causes.*

According to Madame Lachapelle, the most probable cause of this presentation is thus explained: during the greater portion of gestation, while the foetus still enjoys much mobility in the uterine cavity, and its long diameter is easily put in relation with the transverse diameter of the organ, the position of the foetus not being stationary, it may, in virtue of its active motion, present at the orifice almost all the points of its surface, but especially the head and pelvic extremity. I suppose that, at some indeterminate period, this latter part is brought down to the superior strait by the movements of the foetus, and remains there for a longer or shorter period; it may happen that the foetus, during this period, acquires such development as to prevent its leaving the strait; in a word, its long diameter cannot pass the transverse diameter of the uterus, and its pelvic extremity, therefore, remains permanently fixed at the superior strait.

This explanation, although the most rational, is still not altogether free from objection.

§ 2. *Diagnosis.*

Diagnosis of the Presentation.

At an advanced period of pregnancy, it is possible to distinguish a presentation of the pelvic extremity, by abdominal percussion, auscultation, and the touch. At the fundus of the womb there is felt a rounded, hard, solid tumour, which is the head; the intensity of the pulsations of the foetal heart is heard above the umbilicus, and the finger does not recognise at the superior strait the solid spherical surface, represented by the vertex; most frequently it can feel no portion of the foetus at this point; sometimes it is enabled to reach a small movable portion, a foot or a knee.

During labour, before the rupture of the membranes, there is a soft, irregular tumour felt, composed of several parts, some of which are movable, and others stationary. The membranous sac gradually elongates, and finally ruptures; more or less amniotic fluid escapes, because the superior strait is but imperfectly closed by the parts which present.

It is only at this time that the diagnosis can be made with precision.

Complete Presentation.—When the pelvic extremity is composed of all its elements, and the orifice but slightly dilated, we feel at first one buttock; then, in proportion as the orifice opens, the heels and the other buttock descend, and the fissure separating the two buttocks is distinctly recognised. The finger is also able to reach the irregular surface of the sacrum and anus, a small, circular orifice, which contracts on the finger of the accoucheur, and in the vicinity of which there is a small, pointed, elastic prominence—the coccyx, an organ which can be felt in the fattest infants, and which is the essential character of the presentation. In following the median fissure, which separates the buttocks, we also feel the genital organs, and we can ascertain in advance the sex of the child; we should, in this case, employ the touch very delicately if it be a female infant; for if, mistaking the vulva for the anus, the finger should be introduced deeply, the hymen may be destroyed. Finally, the finger of the accoucheur is generally covered more or less with meconium.

(Fig. 193.)



Presentation of the Breech.—The characters of this presentation are the same, except the feet, which cannot be felt.

Presentation of the Feet.—When the two feet present, it is difficult to confound them with any other part. If only one should engage, it is distinguished from the hand by the presence of the os calcis, and by the difference of length between the toes and fingers of the hand. In the foot, the large toe is of the same length as the others; in the hand, the thumb is shorter, and is more separated from the other fingers. The foot forms with the leg an angle more or less acute; the hand is directly continuous with the arm.

Presentation of the Knees.—This very rare presentation is easily recognised; the finger encounters two round tumours, but somewhat pointed; it can pass beyond these tumours, and reach the bend of the knee.

Differential Diagnosis of the Presentation.

At first, one buttock presenting alone, may be mistaken for the parietal protuberance of the vertex, and, in this case, the fissure separating the buttocks may also be mistaken for the sagittal suture. If this error may be pardoned at the commencement of labour, there is no excuse for it at a more advanced period. When the cheeks, in the presentation of the face, by a prolonged sojourn at the superior strait, have become the seat of a sero-sanguineous afflux, they may likewise, at the first aspect, impose on us the belief that the breech presents. But if care be taken to pass the finger in the fissure which separates these two projections, instead of feeling the anus, the coccyx and genital organs, the finger simply penetrates an open cavity, furnished with a tongue and alveolar processes; it recognises the orbits, and especially the nose, a small, pointed, flexible organ, pierced with two openings, and which characterizes the presentation of the face.

Finally, in the pelvic presentation, the amniotic fluid escapes usually mixed with the meconium, and the finger of the accoucheur is likewise covered with this excretion.

Diagnosis of the Position.

In the *complete presentation*, the direction of the point of the coccyx, that of the heels, genital organs, and rugosities of the sacrum, enable us to establish with what point of the superior strait the sacrum is in relation. *Example*: the heels and rugosities of the sacrum directed to the left and in front, the point of the coccyx and genital organs to the right and posteriorly, indicate a left anterior sacro-iliac position.

It will, after this, be perfectly easy to complete the diagnosis of the positions in the other presentations. I should, however, remark, that the positions in the presentation of the knees cannot possibly be recognised when we can only reach the sacrum, for the anterior portion of these organs cannot be distinguished from the posterior.

For the rest, the principal object to bear in mind is to establish the diagnosis of the presentation, in order that it may be ascertained whether the labour is to be confided to the spontaneous efforts of nature; the diagnosis of the position is useful only in cases in which the intervention of art is called for.

ART. I.—MECHANISM OF SPONTANEOUS DELIVERY

I will describe the mechanism of spontaneous delivery in the presentation of the breech, which is the most common; and in the two left anterior and right posterior sacro-iliac positions, which are likewise the most frequent. I will say nothing of the other positions, in which the mechanism is precisely the same.

§ 1. *Mechanism of Spontaneous Delivery in the Full Presentation of the Breech, and in the Left Anterior Sacro-iliac Position.*

The fœtus presents with the legs lying on the anterior portion of the trunk, the breech alone occupying the superior strait.

The back is in front and to the left; the anterior plane of the fœtus regards the posterior right side of the pelvis; the sacro-pubic diameter of the fœtus corresponds with the left oblique diameter; the bis-iliac of the fœtus with the other right oblique diameter. Before the complete dilatation, the buttock in front presents first to the finger of the accoucheur, whether this depend on the position of this part, on the inclination of the pelvic extremity itself, or on that of the plane of the superior strait. But when the orifice is perfectly dilated, the buttocks right themselves, become compressed, and are reduced in size. This first period, which M. P. Dubois calls the *lessening of the parts*, corresponds to the first period of flexion in the vertex, and extension in the face: finally, they descend simultaneously. If the contractions be energetic, on account of the small volume of the breech, it descends promptly into the excavation (second period). In the contrary case, they pass down gradually, without changing the situation they affect-

ed at the superior strait. Having reached the floor of the pelvis, and only when the perineum begins to distend, they execute a movement of rotation (third period), which carries the left buttock behind the right ischio-pubic branch, and the right in front of the left sacro-sciatic ligament. The left buttock descends gradually into the inferior strait and reaches the vulva first, remaining immovable below the right ischio-pubic branch, while the right buttock traverses the concavity of the perineum, and disengages first at the anterior commissure of the perineum.

The left buttock disengages in its turn (fourth period), and the entire breech executes a movement of rotation, which places the bis-iliac diameter of the fœtus in exact relation with the antero-posterior diameter of the vulva.

(Fig 194.)



In proportion as the buttocks disengage at the inferior strait, the arms, applied on the sides and front of the chest, together with the shoulders, enter the excavation in the diagonal position which they affected, as also the pelvic extremity, at the superior strait. The trunk of the fœtus, therefore, is slightly turned on its own axis. They arrive in this way at the inferior strait, and pass it in the same manner as the breech: the left shoulder under the right ischio-pubic branch; the right shoulder on the left sacro-sciatic ligament; they then finally assume the antero-posterior position at the moment they leave the soft parts.

The posterior shoulder, which appears the last, is ordinarily delivered the first.

The head passes the superior strait in the left diagonal position, the occiput behind the left cotyloid cavity. When the head is completely flexed, it presents, at the superior strait, its sub-occipito-bregmatic diameter, and the occipito-mental diameter is parallel to the axis of the inferior strait. If it be only moderately flexed, which is most usually the case, it is the sub-occipito frontal diameter which presents, and the trachelo-bregmatic diameter is parallel to the axis of the inferior strait. The head then becomes flexed, and often passes the inferior strait diagonally; often, also, it executes a movement of rotation, which places the forehead in the concavity of the sacrum, and the occiput im-

mediately behind the pubes; the shoulders become transverse at the vulva (internal rotation of the head, external of the shoulders, fifth period); the forehead and bregma disengage successively at the commissure of the perineum; and the sub-occipito-frontal diameter is in relation with the antero-posterior diameter of the inferior strait.

(Fig. 195.)



This delivery of the head frequently requires, on the part of the accoucheur, an elevation of the trunk, together with gentle direct tractions. In a word, the head has passed the uterus; it is beyond the reach of the contractions of this organ, and those of the vagina cannot always expel it.

§ 2. *Mechanism of Spontaneous Delivery in the Full Presentation of the Breech: the Right Posterior Sacro-iliac Position.*

The back of the fœtus is posteriorly, and to the right; its anterior surface in front, and to the left. The mechanism is precisely the same as in the preceding case, only the movement of rotation, which brings the back forward, is much more complete; and here we find a perfect analogy between what takes place in the presentation of the vertex and that of the face, in which, as has been seen, the occiput and chin, when situated posteriorly, still disengages in front.

This rotation of the back forward is most usually followed by the head, so that the occiput, which has been brought simultaneously with the back to the anterior portion of the pelvis, likewise disengages under the pubes. Sometimes, however, the back alone rotates, and the head enters the excavation in the occipito-posterior position; then, after the expulsion of the trunk, at the moment it is about to disengage, the occiput passes under the pubes.

Such are the laws which most commonly govern the spontaneous expulsion in the presentation of the vertex; but there are some exceptions, which I will mention in the article *Anomalies*.

§ 3. *Spontaneous Delivery in the Varieties of Presentation of the Pelvic Extremity.*

The varieties of iliac, sacral, and anterior presentations do not affect,

or at least very slightly, the mechanism of spontaneous expulsion. Thus, during the first contractions, the pelvic extremity rights itself, and descends. There is here an additional period, the period of righting.

ART. II.—ANOMALIES IN THE MECHANISM OF SPONTANEOUS DELIVERY.

We find, in the mechanism of spontaneous expulsion by the pelvic extremity, perfect analogies with spontaneous delivery in the two presentations of the head.

1st. Thus, the *first period, the lessening of the parts*, which is merely the analogue of the periods of flexion and extension of the vertex and face, is scarcely ever appreciable except when the pelvic extremity presents complete, and when, consequently, it undergoes its reduction of size. The first period, therefore, is less constant than in the two preceding presentations.

2d. The *second period, descent*, cannot fail of itself.

3d. The *third period, rotation*, is exactly the same as in the vertex and face, and is subject to the same irregularities. Thus, the back does not commence its movement of rotation until the pelvic extremity rests on the floor of the pelvis. This rotation, however, of the back, like that of the occiput and chin, may be executed, in part, before the complete descent; and, again, it may not be accomplished until the breech, having passed the inferior strait diagonally, disengages from the soft parts.

§ 1. *Disengagement of the Pelvic Extremity, the Back and Occiput being Posteriorly.*

In fact, the movement of rotation may fail altogether; the back, originally situated posteriorly, remains in this position, instead of placing itself under the pubes.

In this case, the expulsion most frequently terminates spontaneously; for the shoulders, when their bis-acromial diameter is not very long, and the vulva dilatable, and, especially, if the perineum have been ruptured in preceding deliveries, may pass the vulva in a transverse position; the back then glides along the point of the coccyx and the perineum, and the occiput lodges in the concavity of the sacrum. The head may then disengage in two ways: in the first, it becomes firmly flexed, and the entire head disengages by a movement of progression forward, the forehead being placed under the pubes, and the whole occipito-frontal diameter measuring the expulsion of the head. In the second case, the head presents at the inferior strait extended, the chin fixed behind the pubes; the occiput disengages first at the anterior commissure of the perineum, then, successively, the bregma, forehead, and face. But this disengagement, which is rare, can only be accomplished by the assistance of the accoucheur, who supports the trunk of the fœtus, and raises it from A to I.

The disengagement of the head, the back and occiput being posteriorly, presents in general such little difficulty, that an author, founding his opinion on a series of these cases met with in practice, presented to the Academy a memoir, in which he considered this occip-

(Fig. 196.)



ito-posterior disengagement as the most favourable. He inferred, also, from these observations, that, in practising pelvic version, we should endeavour to place the back posteriorly, in order to make the delivery more easy.

Evidently this author has fallen into error; but still we may derive from the facts he states this practical deduction, that the occipito-posterior disengagement is not so difficult as is generally imagined, and that when, in version, this rotation of the back forward is difficult to execute, and cannot be effected without danger to the infant, we must not persist in performing it.

4th. *Delivery, Fourth Period.*—This period cannot fail, except from peculiar circumstances, inertia of the womb, resistance of the perineum, anomaly in the rotation of the hips, shoulders, head, &c., &c.

5th. *External Rotation of the Shoulders, Internal of the Head, Fifth Period.*—This period is the analogue of the external rotation of the head in presentations of the face and vertex, a movement which some authors term restitution.

It presents, also, some varieties in the presentation of the pelvic extremity; thus, after the disengagement of the breech and shoulders in the antero-posterior position, if the head, which is retained in the excavation, be of small volume, it is not solicited to execute the movement of rotation by which the occiput is brought in front, and the head remains diagonally; it is disengaged in this situation, and the shoulders do not execute externally the movement, which carries the back directly forward. The back remains in relation with one or other thigh.

This movement of the shoulders may take place, but in an opposite direction, the back passing posteriorly, because the occiput in the pelvis goes to the concavity of the sacrum. Nature most usually triumphs over these anomalies. I will mention, in the article *Accidents*, the means by which they are to be remedied.

ART. III.—PROGNOSIS OF DELIVERY BY THE PELVIC EXTREMITY.

§ 1. *Relative to the Mother.*

Delivery by the pelvic extremity is somewhat less favourable than delivery by the cephalic extremity flexed. With regard to the prognosis, the pelvic presentation occupies nearly the same rank as the presentation of the face.

The size of the parts composing the pelvic extremity, particularly when it is complete, retards their descent until, under the effort of the contractions, they are reduced in volume. The dilatation of the orifice is also slower, especially if the rupture of the membranes occur prematurely. But M. P. Dubois has never observed, as has been imputed to him, that the delivery will be the more favourable to the *mother* in proportion as the volume of these parts is more considerable. It was in reference to the child that M. Dubois made this observation.

§ 2. *Relative to the Child.*

It is particularly to the infant that delivery by the pelvic extremity proves serious. M. P. Dubois, putting out of question all the cases in which infants seem to have perished under the influence of causes foreign to this presentation, has established the fact that one out of twelve is sacrificed, while only one in fifty succumbs in presentation of the vertex.

What is the cause of this difference? It was for a long time supposed that the death of the fœtus was occasioned, in this case, by the determination of fluids towards the superior parts. This determination could have but very slight influence in producing the death of the fœtus. In a word, the neck of the womb does not contract constantly on the fœtus; there are alternations of relaxation and contraction, during which the circulation can resume its ordinary course. Moreover, the large vessels contained in the great cavities and thickness of the extremities are in part protected from this compression. However, although the parts exposed to the hollow of the pelvis most usually become the seat of this afflux, and the parts contained in the cavity of the uterus cannot become congested on their surface, yet we cannot exactly deny that the internal portion of the parts thus liable to this uterine compression do not become the seat of a slight sero-sanguineous engorgement. The autopsy of children who have succumbed during this form of delivery has almost always enabled us to detect traces of cerebral congestion.

Nevertheless, while we do not altogether assert that this determination does not bear some part in these accidents, it should be kept in mind that the *compression of the cord* is the principal, if not the only cause of the death of the fœtus. In order thoroughly to understand the influence of this cause, let us, in the first place, see what takes place in the presentation of the vertex, and why the cord cannot be compressed unless it descends below the head or is comprised between the fœtus and womb, in some point remote from the orifice; circumstances which present themselves only as exceptions. During the whole period of labour in the presentation of the vertex, even after

the head has passed the maternal organs (fig. 197), the cord floats in the midst of the liquor amnii. Again, after the delivery of the head, the parts which follow it in the pelvic canal, diminishing in size, pass the straits rapidly, and the cord, which accompanies them, cannot in any way be compressed.

(Fig. 197.)



In the presentation of the pelvic extremity, before the umbilicus has passed the superior strait and orifice, the conditions are the same for

(Fig. 198.)



the fœtus as in the presentation of the vertex; the cord is free, and floating above the superior strait (fig. 198); but as soon as the root of the cord has passed the superior strait (fig. 199), the portions of the fœtus which engage and become more and more voluminous, compress the cord, and the life of the child is thus often compromised, especially if the labour is protracted.

When the pelvic extremity presents incompletely (as in fig. 198, 199), the gravity of this mode of delivery is enhanced.

In a word, if the child present by the feet or knees, these parts exhibit but little volume, and can pass the uterine orifice, although still incompletely dilated. The fœtus, indeed, represents a cone, the summit of which engages before the base. Parts more and more voluminous present successively at the orifice, and are obliged, before they descend, to sojourn at the superior strait for a longer or a shorter time, until the dilatation is sufficient to enable them to pass. Thus, after the inferior extremities, come the hips, then the shoulders and head. As long as the hips have not passed the orifice, there is no danger of the infant (fig. 198), the cord being entirely out of the reach of compression; but as soon as the umbilicus has freed the orifice, it is compressed, and this compression is the more exact and prolonged as the portions of the fœtus which follow the hips are more voluminous, and the orifice more resisting.

(Fig. 199.)



The fœtus is, therefore, deprived of the vascular relations which unite it to its mother, and perishes from asphyxia.

It will now be readily understood, contrary to the opinion formerly received, and which at the present day some accoucheurs profess, that

delivery by the pelvic extremity is the more favourable as this extremity engages more completely (fig. 192). In this case, indeed, these combined parts presenting at the orifice a volume almost as considerable as that of the head, although more reducible than the pelvic extremity, sojourn above the superior strait until the mouth of the womb is fully dilated. The first period of the delivery is the longest; but after the descent of this complete extremity, the shoulders and head, which have been preceded at the orifice by a part nearly as voluminous as themselves, find this orifice permeable, and pass through it rapidly. This second period of delivery is much more rapid than in the incomplete presentation of the extremity; and it is in this circumstance that rests all the difference in the prognosis between the two modes of presentation. In fine, as the cord is usually compressed during the second period of delivery, if this period be rapid, the chance of compression will be much diminished. Statistical facts prove incontestably the truth of this assertion. In the complete presentation of the pelvic extremity, the life of the child is much less endangered than in that of the breech; and this latter is more favourable than that of the knees or feet.

(Fig. 200.)



Finally, the delivery is more favourable when it terminates spontaneously than when art is obliged to interfere. In pelvic version, in a word, one child succumbs in seven.

§ 3. *Conduct of the Accoucheur during this Delivery.*

After what has preceded, the conduct which the accoucheur should pursue in delivery by the pelvic extremity is already pointed out, since the labour will be the more favourable as art interferes less. This delivery should be confided to nature, no matter what the mode of presentation of the pelvic extremity, unless peculiar circumstances should

render the assistance of the accoucheur necessary. In fact, tractions made on the presenting parts, with the object of hastening their descent, only accelerate the period at which the umbilicus enters the excavation, and becomes compressed.

If the complete pelvic extremity present, since this circumstance is favourable to the fœtus, we should be careful not to remove it from the superior strait by attempting to introduce the hand for the purpose of bringing down the feet and knees through an orifice but imperfectly dilated.

This practice, generally adopted for a period of thirty years, has not so entirely fallen into disuse as not to justify an opposition to it, as being repugnant to the laws of nature.

So far from interfering with this complete presentation of the pelvic extremity, as I have often heard M. P. Dubois remark, we should endeavour even to increase its size if possible, in order that the parts may not pass before the full dilatation.

If the knees or feet present, we must still be on our guard against the temptation we naturally feel to hasten the delivery, by making tractions on parts affording so ready a purchase. We should learn to resist this impatience of both ourselves, the female, and assistants; it is a difficulty rarely overcome by the young accoucheur at the commencement of his career. In fine, if we do not interfere with this incomplete presentation, the umbilicus will engage in the superior strait much less rapidly than if tractions be made on the feet; and the chances of compression will be retarded as long as possible, until the dilatation is entire; whereas, in drawing on these extremities, the period for this compression will be hastened.

Although we may establish as a principle that, in most cases, the accoucheur should remain a simple spectator, it must, however, be added, that if this rule should never be infringed during the first period of delivery, it is not always so with the second period. The accoucheur should, on the contrary, hold himself prepared to act in case the pelvic extremity, deeply descended in the excavation, should not be expelled with sufficient rapidity by the uterine contractions, in order that the compression, which takes place at this stage of labour, may not prove fatal to the child.

CHAPTER I.

ACCIDENTS WHICH MAY OCCUR DURING THE WHOLE PROGRESS OF LABOUR WHEN THE PELVIC EXTREMITY PRESENTS.

THE description of these accidents, whether the vertex, face, or pelvic extremity presents, is precisely the same; neither do the general methods of proceeding vary: there are some special rules, however, which undergo certain modifications. For the most part of these accidents, I refer to the presentation of the vertex; I will speak partic-

ularly of those only which are modified by the pelvic extremity, and which call for certain peculiar manipulations. After this enumeration, I will give the general rules for the extraction of the fœtus applicable to all the accidents which require this operation.

ART. I.—ACCIDENTS CAPABLE OF RETARDING OR PREVENTING DELIVERY.

The accidents contained in this article need no other care than in the presentation of the vertex. (See *Accidents in Presentation of the Vertex*.)

ART. II.—DISEASES FOREIGN TO LABOUR, AND WHICH REQUIRE THE PARTICULAR ATTENTION OF THE ACCOUCHEUR, AND SOMETIMES HIS INTERVENTION. (See *Vertex*.)

ART. III.—ACCIDENTS CAPABLE OF COMPROMISING THE LIFE OF MOTHER AND CHILD. (See *Vertex*.)

§ 1. *Escape of Liquor Amnii tinged with Meconium.*

In the presentation of the pelvic extremity, the discharge of the meconium which commingles with the liquor amnii is far from possessing the same importance as in the two preceding presentations. This expulsion of meconium is occasioned by a mechanical cause, the compression of the parts. It may occur, also, without leading us to conclude that the life of the child is in danger. As this accident, however, as in presentation of the vertex, may depend on compression of the cord, it is indispensable to ascertain carefully the condition of the fœtal circulation.

If the rhythm of the pulsations be altered, if they become enfeebled after a period of marked acceleration, it is because the life of the child is in peril. It therefore must be extracted. For the rules of this extraction, see, at the end of this chapter, *Obstetric Operations*.

§ 2. *Brevity of the Cord.* (See *Vertex*.)

The consequences of brevity of the cord are less serious than in the presentations of the vertex, because they can be remedied more promptly. Thus, as soon as the pelvic extremity is sufficiently descended in the excavation to permit the umbilicus to be reached, we may ascertain, by making tractions on the cord, whether the delay in the descent is owing to the brevity of the cord; and then, as soon as the orifice, which has permitted the passage of the pelvic extremity, is sufficiently dilated to permit the ready extraction of the shoulders and head, we should pull gently on the parts which present until we are enabled to make a section of the cord; the delivery must then be promptly terminated. (See, at the end of this chapter, *Obstetric Operations*.)

ART. IV.—DIFFICULTIES OCCASIONED BY ANOMALIES IN THE MECHANISM OF LABOUR.

§ 1. *Anomaly of the First Period.*

When the parts are so large as not to have their size reduced, the descent may be retarded, but will never be prevented by this anomaly, unless the pelvic extremity should possess excessive dimensions. Under these circumstances, the dilatation being complete, we should proceed to the extraction of this extremity, either by seeking the feet, or by making tractions on the hips, according to the peculiarities of the case.

§ 2. *Anomaly in the Descent.*

Excessive size of the parts, inertia of the womb, resistance of the orifice, &c., &c., occasion this anomaly. (See article *Mechanical Obstacles to Delivery.*)

§ 3. *Anomaly in Rotation.*

When rotation of the sacrum forward is incomplete, the delivery, in most cases, is effected with facility, even if the sacrum should pass posteriorly. This period of rotation is subjected to the same irregularities as its analogue in presentations of the head, only that in, presentation, of the pelvic extremity, it scarcely requires the intervention of the accoucheur. Such is not the case in presentation of the vertex; art is often obliged to interfere when the rotation of the head is incomplete, and sometimes even when the occiput is posteriorly; and it will be seen, from what I have said of the gravity of the posterior mento-iliac positions of the face, what the difference is between this anomaly in the presentation of the face and the sacro-sacral position of the pelvic extremity, when nature almost uniformly suffices.

For the mode of proceeding in this case, in the event of the delivery not taking place, see *Obstetric Operations* at the end of this chapter.

§ 4. *Anomalies in the Delivery.*

This period cannot fail of itself.

§ 5. *Anomalies in the Fifth Period: Internal Rotation of the Head, External of the Shoulders.*

Immediately after the expulsion of the trunk, the head executes internally a movement of rotation, which places the occiput behind the pubes, or in the concavity of the sacrum. Externally, this movement is followed by the shoulders, which become transverse to the vulva. This movement of rotation is necessary to the delivery of the head. In case it should not be accomplished, we must produce it by introducing the right hand, if the occiput be to the left, and *vice versâ*, under the head, and place the fingers on the face, in order to bring it into the hollow of the sacrum. (See fig. 201.)

(Fig. 201.)



ART. V.—MECHANICAL OBSTACLES TO DELIVERY.

I have nothing particular to remark with regard to the *resistance of the membranes, the agglutination of the external orifice, the rigidity of the orifice, or its improper direction*. These accidents are the same as in presentation of the vertex, and are to be remedied in the same manner.

It has been recommended, in a work recently published, to overcome the spasmodic contraction of the orifice of the womb on the neck of the child, after the expulsion of the trunk, by dividing the orifice with a cutting instrument. To recommend the section of the uterine orifice with a bistoury, when the trunk of the fœtus completely fills the excavation, cannot but excite astonishment; and my readers will appreciate whether such a thing is possible.

Opiates, bloodletting, and tractions are the only means of overcoming this resistance.

§ 1. *Descent of some other Portion of the Fœtus.*

If the hands should descend simultaneously with the pelvic extremity, this complication will be of no consequence. In proportion as this extremity descends, the hands remain above, and when, even, they pass down with the pelvis, they scarcely ever oppose its descent.

If, however, it should become necessary to reduce these parts, all

that will be required is to support them during the contraction of the uterus.

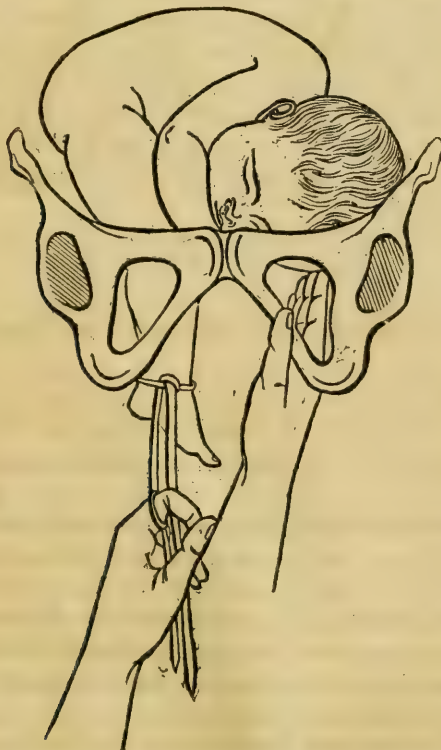
But it is different when the head descends simultaneously with the pelvic extremity; this accident, which is very rare, and scarcely ever occurs except in pelvic version, requires the assistance of the accoucheur. With the extremity of one hand he pushes up the head, while with the other he exerts tractions on the pelvic extremity (fig. 202).

§ 2. *Varieties of Presentation.*

I have already remarked that the varieties of presentation are appreciable only when the pelvic extremity is complete, or when the breech presents. In fact, the mobility of the feet or knees is such that their inclinations can have no influence on those of the breech.

These varieties require interference much less frequently than those of the vertex. Thus, if one hip occupy the superior strait, the pelvic extremity becomes righted, and then descends.

(Fig. 202.)



If the sacrum present, the same movement of righting takes place; and it is the same with the anterior variety. If, however, one of these varieties should continue, we must aid the descent of the pelvic extremity by righting it; and in this case the righting will be as difficult as in the presentations of the vertex, and then proceed to the extraction of the fœtus. (See the following chapter: *Obstetric Operations*.)

§ 3. *Multiple Isolated Fœtuses.* (See *Vertex.*)

If two fœtuses should present simultaneously at the superior strait by the extended pelvic extremity, one passes first, and the other follows; however, in this case, the two may descend simultaneously; the inferior extremities pass into the excavation without difficulty, but the hips, presenting at the superior strait, prevent the descent of the rest of the trunk. Under these circumstances, certainly of rare occurrence, what is to be done? We should push up one fœtus, and make tractions on the other; and we should be careful to seize one of the feet only, in order that we may not make tractions on two extremities appertaining to different fœtuses.

While, therefore, we pull on one foot or one knee, we support with the other hand the parts that remain stationary, and do not yield to these tractions.

§ 4. *Monstrosities.* (See *Vertex.*)

If two pelvic extremities should present, and the fœtuses be united (which cannot be known in advance), we should make tractions on one foot only, as in the preceding paragraph; but it will be perceived that these tractions cause both fœtuses to descend, and their bodies being pressed one on the other, may thus pass through the pelvis. In case, however, this cannot be done, we must proceed as in the presentation of the vertex.

I will not speak of the obstacles occasioned by the soft parts.

In order to remedy the adhesion of the *labia*, the *persistance of the hymen*, the *narrowness and rigidity of the vulva*, and the *resistance of the perineum*, we must fulfil the same indications as in the presentation of the vertex.

§ 5. *Indications in Deformities of the Pelvis.*

Deformities of the pelvis constitute very serious complications in the presentation of the pelvic extremity; for even when nature is competent to effect delivery, or only slight tractions are needed, the child is most usually sacrificed. In a word, when the head presents first, it can more readily overcome the resistance to its descent; and while it is performing this object, the cord is free in the uterine cavity, and removed from all compression. But, on the contrary, in the pelvic presentation, when the trunk has been expelled without difficulty, the head, especially if it be extended, presents at the deformed superior strait extremely unfavourable diameters; and it will require some time for it to remove the obstacles to its descent, during which the fœtus will be sacrificed from compression of the cord. In this case, cephalic version has been recommended; but, as will be seen in presentations of the trunk, even when the head is near the orifice, this operation is surrounded with so much difficulty, that we are frequently obliged to renounce it; the difficulty, therefore, will be considerably increased if we attempt to bring down the head in the pelvic presentation, when, of course, it is situated in the fundus of the organ; should

we, even in this presentation, attempt the operation, and would it be more reasonable to confine ourselves to the ordinary methods of extraction ?

If, however, we shall have ascertained positively, before the rupture of the membranes, that the pelvic extremity presents at the superior strait, we may endeavour to bring down the vertex instead of the breech. M. Colomb has mentioned that he has often succeeded in similar cases.

The manner of effecting this substitution consists in passing up the breech with the finger through the membranes, at the same time that we attempt to depress the head with the other hand placed in the abdominal walls, or by means of external manipulations with both hands.

The conditions favourable to the performance of this operation are rarely met with ; for, in order that it may be accomplished, the uterus should not be distended with amniotic fluid, and the abdominal and uterine walls should be relaxed, thin, and free from pain.

In case we should be enabled to achieve this manipulation, we should then confide the delivery to nature, and abstain as much as possible from making tractions on the parts ; these tractions in the pelvic extremity will be indicated only when the efforts of the womb prove insufficient.

Should, however, the contraction of the pelvis be such as to occasion great difficulty in the descent of the incomplete pelvic extremity, the life of the child will certainly be sacrificed ; and the mother cannot be delivered but by detruncating the fœtus, in order to remove its body from the excavation, and thus be enabled to seize the head with the forceps, perforate, or break it down by means of the cephalotribe.

§ 6. *Movable or fixed Tumours in the Excavation, Vagina, and Labia Majora, &c., &c.*

The conduct of the accoucheur here will be the same as in the presentation of the vertex, except as to the modes of extraction, which will vary.

§ 7. *Excessive Size of the Fœtus.*

After being satisfied that the uterine contractions are insufficient to determine the descent, we should endeavour to effect it ; for this purpose, the dilatation being complete, the hand is introduced, and an attempt made to seize the feet or one of the hips, and thus bring down the pelvic extremity. For the management of the extraction of the trunk and head in the excavation, see *the following chapter*.

If the excessive size of the fœtus should depend upon the abnormal development of a tumour on the breech, hydrocephalus, hydrothorax, ascites, &c., &c., we must employ the same means as indicated in the *presentation of the vertex*. To reduce the size of the part by puncture or the cephalotribe is the only resource of the operator.

CHAPTER II.

OBSTETRIC OPERATIONS PROPER IN PRESENTATION OF THE PELVIC EXTREMITY.

WHATEVER may be the complication requiring the extraction of the fœtus when it presents its pelvic extremity, the means to be employed are always the same; they vary only according to the period of labour, that is, according to the degree of elevation or descent of the part to be seized, according to the mode of presentation, and the size of the part, together with the diameter of the pelvis.

ART. I.—COMPLETE PRESENTATION OF THE PELVIC EXTREMITY.

Whether it be excessive size of the parts, or any other complication I have enumerated, that hinders the extraction of the fœtus, this extraction must be effected according to circumstances, either with the hand or the crotchet.

§ 1. *Manual Delivery.**Pelvic Extremity at the Superior Strait.*

If the pelvic extremity be above the superior strait, after placing the female as for the operation of version, and having previously arranged everything that may be necessary during or after the operation (see *Version*), the hand, the palm of which regards the anterior surface of the fœtus, is introduced with all possible care; it penetrates with great delicacy the uterine orifice, ruptures the membranes if still intact, then passing to the feet, which will be found quite near the orifice, they are both grasped, if this be practicable; if not, one only is seized and brought down; the remaining part of the operation is in every respect similar to the rest of pelvic version. (See *Version*.) The same observation applies to the difficulties which may be met with in the extraction, and the means of overcoming them.

The Pelvic Extremity half engaged in the Excavation.

In this case, if the hand can reach the feet without difficulty, they should be brought down; if not, the index finger should be hooked in the groin, and thus pull the breech into the excavation.

On which hip should traction be made? We should in preference act on the one in front; and, for this purpose, the index finger should be introduced between the pubes and hip; but sometimes there is not sufficient space between these two parts to enable us to do this; and most commonly we are compelled to proceed from behind forward, hooking the anterior groin with the finger passed between the root of the thighs; this hip is thus seized and brought down into the excavation; the finger, still remaining between the root of the thighs, is then

turned towards the posterior portion of the pelvis, and brings down the posterior hip by fixing itself in the fold of the groin. This hip is more readily seized, because it is depressed simultaneously with the first; the finger, still continuing its tractions, draws it into the inferior strait, slightly elevating as it descends. In fine, it is made to traverse the concavity of the sacrum, while the anterior hip remains fixed behind the pubes.

This being accomplished, the remaining part of the traction is the same as in *version*.

§ 2. *Blunt Hook.*

If, however, the finger should not succeed in reaching the hip, either on account of its being too elevated or too large, we must then employ the blunt hook, in order to bring down the hips. M. Champion has modified, for this purpose, the crotchet of Smellie; this instrument appears to me to combine all the necessary advantages.

The blunt hook is applied precisely in the same manner as the finger. Thus, we should endeavour, in the first place, to hook the groin of the hip in front by passing the instrument along the symphysis pubis, at the root of the thighs; this hip should then be brought down, and afterward the other; but it is not possible to pursue exactly the same course.

In fine, when the operator feels that the hook is properly applied, and that it cannot injure the maternal organs, he should introduce the hand to ascertain that its extremity is not placed on any parts that may be injured during the tractions. If we should succeed in passing the instrument under the pubes, it would be possible to ascertain this fact with the hand introduced along the root of the thighs; but, as the instrument can ordinarily be introduced only between the thighs on the anterior hip, the hand will not be able to recognise its proper situation, for it cannot pass between the pubes and hip.

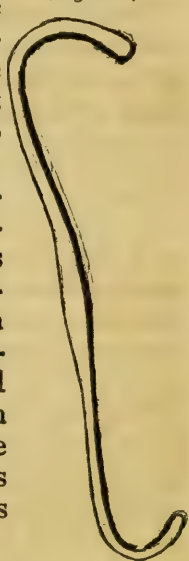
On the contrary, as the hand can very readily enter the concavity of the sacrum, we should fix the hook on the posterior hip, proceeding from before backward between the root of the thighs. The extremity of the fingers will then distinctly feel whether the hook is so applied as not to endanger the parts of the mother.

It must not be supposed that these precautions are unnecessary; the best possible blunt hook, if improperly guided, may be followed by serious inconveniences.

The Complete Pelvic Extremity deeply descended in the Excavation.

In this case, it is always easy to hook the hip with the index finger, unless a circumstance similar to that mentioned in the preceding page should present itself.

(Fig. 203.)



ART. II.—THE PELVIC EXTREMITY PRESENTS INCOMPLETELY BY THE HIPS.

§ 1. *Manual Operation.**Superior Strait.*

The hand, the palm of which regards the anterior surface of the fœtus, being introduced, the index finger passes along the root of the thighs, and fixes itself in the bend of the hip, and is not carried up for the purpose of seizing the feet, which are placed at the fundus of the organ. This hip will be brought into the excavation, and thence into the inferior strait; then the finger, pronated, grasps the posterior hip, and brings it down along the concavity of the sacrum, and thus to the vulva. The rest of the extraction is the same as in pelvic version.

Inferior Strait.

When the back is to the left, the index finger of the right hand is introduced into the hollow of the sacrum, and fixed on the posterior groin; and the index of the left hand, applied under the pubes, is carried to the anterior groin; then the two hands impart to the pelvic extremity a movement of traction and elevation. In proportion as the parts are delivered they are rotated, so that when the extraction of the trunk is completed, the occiput will be in front.

Finally, if the feet or knees present alone, the rules will be precisely the same as in the latter period of extraction by version.

§ 2. *Forceps.*

Some authors have recommended to apply the forceps on the pelvic extremity; but should the fœtus be alive, great inconveniences will arise, for the compression exerted by the end of the blades on the abdominal organs will certainly endanger the life of the child; and, whether it be dead or alive, the instrument cannot obtain on the pelvic extremity a sufficiently firm hold to enable it to extract the fœtus. It should, therefore, not be employed in this case on the breech, but it sometimes becomes necessary to apply it to the head, which has been arrested at the inferior strait, after the expulsion of the trunk, and not at the superior strait. The application in this case is impossible, unless the detruncation of the child has previously been effected.

§ 3. *The Cephalotribe.*

The cephalotribe may be employed on the pelvic extremity in order to diminish its size, in case of deformity of the pelvis. This instrument is not, like the forceps, liable to lose its hold, for the parts are firmly held by the teeth of the cephalotribe.

After the extraction of the pelvis by means of the cephalotribe, this instrument may also be applied to the chest, and, finally, to the head, when it is arrested at the superior strait; but not until the trunk of the fœtus has been previously removed from the excavation.

TITLE V.

PRESENTATIONS OF THE TRUNK.

I HAVE already stated, in speaking of the classification of the presentations and positions, that the fœtus, at full term, can present at the superior strait only by the lateral regions of the trunk; and that neither the back, nor anterior surface of the chest, has ever been felt directly over this strait.*

These presentations, therefore, are two in number, one for the right, the other for the left side; they are called full when the acromial portion of the shoulder occupies the centre of the orifice; but, at the commencement of labour, this part is not always felt at the superior strait; the finger recognises the shoulder, and a small portion of the anterior surface of the chest—this is the *sternal variety*; or the shoulder and a small portion of the posterior surface of the chest are felt—*dorsal variety*. The shoulder and hollow of the neck may also be felt at the superior strait—*cervical variety*; finally, the finger may pass on the side, properly so called, on the portion of the chest on which rests the elbow of the infant—*cubital variety*.

The varieties in the presentation have no great importance in practice; for even if they manifest themselves at the commencement of labour, they do not continue a long time; and, under the influence of uterine contractions, these varieties disappear to give place to the full presentation (acromial), as occurs in the corresponding varieties of the vertex, face, and pelvic extremity.

* August 16th, 1835, I was requested by Dr. Camman, of this city, to visit with him a patient, who had been in labour twelve hours. He informed me that her sufferings had been very severe, and the expulsive efforts of the uterus constant and vigorous. He remarked to me the peculiarity of the presentation, and requested that I would accompany him for the purpose of attempting the version of the fœtus. On arriving at the bedside, we found Mrs. W. labouring under considerable mental excitement, from the fears she entertained as to her safety, which, together with the strong expulsive efforts of her womb, rendered her an object rather unfit for a successful operation. She was extremely opposed to any attempt being made to deliver her; but, on being assured that every care would be taken not to harm her, and that we did not intend to use instruments, she finally consented to an examination. At the request of Dr. Camman, I proceeded to ascertain the exact condition of things; on carrying my finger into the vagina, I encountered several folds of the umbilical cord, but all pulsation had ceased. At the superior strait I distinctly felt the abdomen of the fœtus; there could be no error here, for the umbilicus of the infant lay immediately over the centre of the strait. Resting on the posterior surface of the cervix uteri, I discovered another portion of the fœtus, which, after a cautious examination, I recognised to be the elbow; the forearm was flexed on the arm, and in this way the elbow had descended—rather a singular presentation. Now, what was to be done? The obvious indication was to proceed at once to delivery by attempting to bring the feet into the vagina. The membranous sac had ruptured about three hours before we arrived; and the escape of the amniotic fluid had much enhanced the expulsive character of the pains, and the uterus was contracting firmly on the fœtus as it lay at the superior strait. The difficulty, therefore, of the operation was manifest. The patient was strong, and of rather a rigid muscular fibre, and we abstracted from her arm twelve ounces of blood. This was followed by a partial relaxation; and, placing the patient in the ordinary position for turning, I proceeded to deliver. With much less difficulty than I had anticipated, I succeeded in bringing down the feet, and the extraction of the fœtus was accomplished without any delay, and without the occurrence of any untoward accident. The mother soon recovered.—ED.

(Fig. 204.)



Moreover, interference being necessary in the presentations of the trunk, it matters little whether they are full or inclined, for the mode of proceeding will always be the same in all these cases.

These varieties are converted into full presentations in the following manner: if the neck of the infant occupy the orifice simultaneously with the acromion, the head ascends little by little, while the acromion descends alone. In the cubital variety, on the contrary, the pelvic extremity ascends, and the acromion passes down to the centre of the superior strait. Finally, in the dorsal and sternal varieties, the foetus rights itself, and the acromion again occupies the centre of the superior strait.

Also, when we recognise a presentation of the shoulder before the rupture of the membranes, or at the moment the membranes rupture, we may frequently recognise one of these varieties of presentation; while, if we make the examination after the contractions have acted on the foetus, we most frequently find the shoulder fixed at the superior strait (full *acromial* presentation), the change having taken place.

It sometimes happens that, at the commencement of the rupture of the membranes, the arm which follows the shoulder descends in the orifice, and presents even at the vulva. This occurrence is constant in these presentations when the interference of art has been a long time delayed. The contractions gradually cause the shoulder to descend, and then the arm. Certain accoucheurs, regarding this presentation of the arm, in the presentation of the shoulder, as more serious than the *acromial* presentation, have made it a distinct presentation, under the name of presentation of the arm and hand; I look upon it more as requiring intervention than occasioning an obstacle.

As to the positions which the foetus may assume in each of the presentations of the trunk, they are two in number for each lateral region of the trunk (whether the presentation be full or a variety).

Presentation of the Right Side or of the Right Shoulder. (Two Positions.)

The head is to the left (left cephalo-iliac), back in front; or the head is to the right (right cephalo-iliac), and the back posteriorly.

Presentation of the Left Side or Left Shoulder. (Two Positions.)

The head is to the left (left cephalo-iliac), the back posteriorly; the head is to the right (right cephalo-iliac), the back in front.

§ 1. *Causes.*

The causes of presentations of the trunk cannot be very well appreciated. But it is generally supposed that small size and mobility of the fœtus, and obliquity of the womb, may occasion them. I cannot believe, however, that they are produced by sudden fright.

The presentations of the trunk are more frequent than those of the face; Madame Lachapelle has observed sixty-eight in fifteen thousand six hundred and fifty-two labours, and M. P. Dubois thirteen in twenty-two hundred labours. The presentation of the right lateral region is also more frequent than that of the left.

The left cephalo-iliac positions are more common than the others, probably in consequence of the greater frequency of the left occipito-iliac position.

I shall not treat of the diagnosis of the presentations and positions until I speak of the rules for interference.

In fine, spontaneous expulsion, in these presentations, constituting an exception, and taking place, in most cases, without the knowledge of the accoucheur, and without nature receiving any assistance, it is only when it becomes necessary to change the presentation or extract the fœtus that it becomes important to know which shoulder presents, and in what positions.

§ 2. *Spontaneous Delivery in Presentation of the Trunk.*

Art should always interfere in presentations of the trunk; it is a rule from which the accoucheur should never depart, except under peculiar circumstances, which I shall mention hereafter.

In a word, although nature will sometimes suffice in these cases, yet this spontaneous expulsion must be considered as altogether an exception, the accomplishment of which requires a combination of circumstances not often met with.

This expulsion may also be very happy for the mother and child; but it most frequently compromises the safety of the child, and is more or less dangerous for the mother.

Spontaneous expulsion may take place in three ways:

A. Before the period of viability, and especially when the fœtus is dead and softened by putrefaction, it may be expelled folded double, and thus, expulsion not being governed by any rule, the fœtus is thrown off from the maternal organs like an amorphous mass.

B. From the period of viability until full term, the fœtus may be expelled by two different mechanisms:

1st. The shoulder, under the influence of uterine contractions, or the active motions of the fœtus, may pass from the superior strait, in order to give place either to the head or the pelvic extremity. This change of presentation has received the name of *spontaneous version*.

2d. The shoulder, pushed by the contractions of the womb, may descend in the excavation, and become fixed under the pubes, while the trunk progresses, passing, as it were, into the concavity of the sacrum, and glides between the shoulder and posterior wall of the pelvis, and disengages at the anterior commissure of the perineum. This is what is termed *spontaneous evolution*.

Spontaneous Version.

Spontaneous version is nothing more than a change of presentation, by which the head or pelvic extremity replaces the shoulder, which gradually leaves the superior strait.

It is not, therefore, a delivery by the shoulders, but by the head or pelvic extremity; a very different thing from *spontaneous evolution*.

This spontaneous version may occur, whatever the period and dimensions of the fœtus, but it can only take place while the membranes are intact, and the fœtus enjoys great mobility. It will also be seen, from these circumstances, that the delivery for the mother and child will be as favourable as if it had occurred in the presentation which replaced the shoulder.

Although M. Velpeau had occasion to observe a case of spontaneous version after the rupture of the membranes, it is, nevertheless, certain that this change of presentation is scarcely possible after the escape of the waters; and that, when the fœtus is expelled spontaneously in this case, it is only by the mechanism of *spontaneous evolution*.

Spontaneous version almost always takes place without the knowledge of the accoucheur; also, we but imperfectly understand its mechanism and causes

Prognosis.

The prognosis in this expulsion is extremely favourable to both mother and child. As soon as the presentation is changed, the membranes rupture, and the delivery will pass on as happily as if it had been a presentation of the vertex or pelvic extremity.

Spontaneous Evolution.

The spontaneous evolution or expulsion of the fœtus in the presentation of the shoulder, much better understood than spontaneous version, is accomplished nearly by the same laws as all the other mechanism of spontaneous expulsion, and this regularity in the expulsion is the more perfect as the fœtus approaches more nearly the dimensions at term. Thus, we have the analogue of the first period of flexion, also descent, rotation, and extension, and, finally, even external rotation. But this mechanism is the more difficult and the more dangerous for both mother and child, as the size of the latter is more considerable.

In order to describe this mechanism, I will suppose a presentation of the right shoulder, *left cephalo-iliac position*.

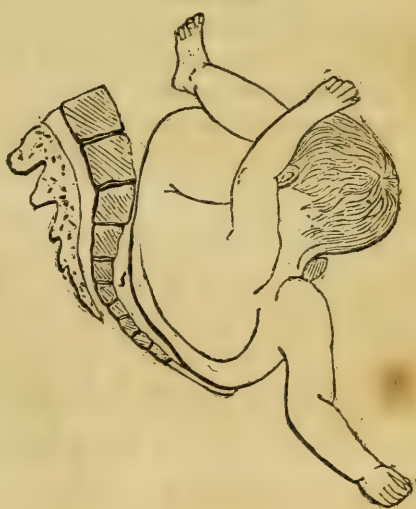
Immediately after the rupture of the membranes, the parts diminish in size by the compression they undergo. The first period is the analogue of flexion in the presentation of the vertex, of extension in that

of the face, and of the *lessening of the parts* in the presentation of the pelvic extremity. Then the shoulder descends gradually, and, in proportion as it enters the excavation, it executes a movement of rotation, which places the head on the horizontal branch of the left pubes, and thence under the pubic arcade. After this movement, the arm disengages, and passes out of the vulva; sometimes the expulsion of the arm takes place before this period. When the rotation is performed, the period of the descent of the trunk is complete; the side of the fœtus is pushed into the excavation by gliding on the right sacro-iliac symphysis, while the shoulder remains immovable. After the side, the pelvic extremity descends, which also pursues the same direction. Finally, the perineum distends, and there successively pass out at the anterior commissure of the perineum, the lateral and superior portion of the chest, the side, properly so called, the hip, and pelvic extremity. In proportion as these parts are delivered, the head and left arm enter the excavation, but they are soon expelled; and, in most cases, the head does not undergo its movement of internal rotation. In a word, it presents at parts which have been excessively dilated, and it is not solicited by them to perform this movement of rotation.

(Fig. 205.)



(Fig. 206.)



(Fig. 207.)



(Fig. 208.)



Such is the course pursued when the dorsal surface of the fœtus corresponds to the front of the pelvis. When the anterior surface of the infant is in relation with the anterior part of the female, the expulsion is exactly the same; but it is also more easy, in this case, to recognise the regularity with which is accomplished the movement of its external rotation, which, in every presentation, brings the posterior surface of the fœtus forward. This movement is effected here with perfect regularity; in proportion as the fœtus passes the vulva, a movement of torsion is exercised upon it, which brings the back of the child in front. M. P. Dubois was the first to notice this circumstance.

(Fig. 209.)



I have twice had occasion to observe the mechanism of spontaneous evolution, once at La Maternité, and once at La Clinique, in a twin

pregnancy. In the first case, the fœtus was not viable. In the second, the twin which was expelled in this way was exceedingly small, and had attained only its eighth month; it survived its birth. M. Velpeau has reported a great number of similar cases. In some of these, the fœtuses had attained the full period of gestation. Denman, also, mentions several cases; but it will readily be understood that, in the great majority of instances, this expulsion cannot take place at term when the fœtus and pelvis possess their normal dimensions; and that the mother, if art should not interfere, will often succumb without achieving the object. The dangers, likewise, to which both mother and child are exposed are manifest. The length of the labour, and the compression exerted on the infant, almost always cause its death, and the forced passage of the fœtus contuses and lacerates more or less the organs of the mother; and, again, the distressing and continued suffering occasioned by this species of labour in the entire economy, gives rise to a general disturbance, which often sacrifices the patient.

The prognosis, therefore, of this labour at term is extremely unfavourable; and we cannot too strongly condemn the practice of Denman, who confides the most of these expulsions to nature. In 137 spontaneous evolutions, according to M. Velpeau, 125 children were sacrificed; and how many mothers succumbed before the termination of the delivery, or soon afterward! how many, also, had entailed on them, during their life, the most deplorable maladies, to which death itself would be preferable!

Before term, spontaneous evolution may be accomplished without the same hazard to the mother and child, especially if the pelvis be capacious, the contractions energetic, the fœtus small, and the parts relaxed. In a primipara, the difficulties will be much increased.

In conclusion, as this form of delivery cannot be accomplished except under peculiar circumstances, and as it almost invariably compromises the safety of mother and child, when even it is effected, *the accoucheur, whenever he can interpose, should never remain a simple spectator*, unless the fœtus should not have attained its period of viability.

CHAPTER I.

OPERATIONS.

ART being always obliged to interfere in this presentation, I shall not speak of the accidents capable of complicating it, as I have done in the three preceding presentations, for the necessary intervention for the presentation of the shoulder itself will remedy, at the same time, whatever complications may arise.

But I will treat of these accidents in regard to the difficulties which they may occasion in the performance of the operations indicated in

presentation of the shoulder, and in regard to the modifications they may render necessary in the different methods.

After the period of viability, and even before, if it be possible to interpose usefully, the accoucheur should aid nature.

ART. I.—ASSISTING NATURE.

The rules pursued by the accoucheur in assisting nature will vary according as the membranes are intact or ruptured, and according to other circumstances, to which I shall allude in proportion as they present themselves.

§ 1. *Before the Rupture of the Membranes.*

A. *Diagnosis of the Presentation.*—Before the rupture of the membranes, what are the symptoms indicating the presentation of the trunk, and what should be the conduct of the accoucheur? Previous to the rupture of the amniotic sac, the presence of a shoulder at the superior strait may be recognised by the following signs:

In percussing the abdomen, it will be found that the long diameter of the uterus is not perpendicular, but transverse; and that the head of the foetus, a rounded, solid tumour, is situated in one of the iliac fossæ.

The vaginal touch will enable us to recognise the presentation; in the first place, we will not feel at the superior strait either the vertex, face, or pelvic extremity; and, moreover, the part reached by the finger will be very elevated and pointed, presenting at its summit an osseous prominence, formed by the acromion. Again, if the presentation be not full, we will be enabled to feel the elbow scapula and intercostal spaces.

All these characters can be easily traced through the membranes, and will enable us to distinguish readily the presence of the shoulder at the superior strait. But the sac being intact, it will be extremely difficult to recognise which shoulder presents, and the exact position of this shoulder. This latter part of the diagnosis is happily not in all cases absolutely indispensable.

Such, however, is not the case with regard to the diagnosis of the presentation; it is necessary that the presence of the trunk be ascertained at the superior strait, and, as far as possible, before the rupture of the membranes, in order that we may endeavour to operate, if practicable, before their rupture; and, under any circumstances, to be prepared to proceed as soon as the rupture occurs, and the dilatation is complete.

The infrequency of these presentations obliges us to familiarize ourselves with them by exercising with a dead foetus on the manikin. This, insufficient as it may appear, is the only means the pupil can command, and it is too important to be neglected.

This kind of manipulation has enabled several of my pupils to recognise very promptly presentations of the trunk, which certainly they would otherwise have mistaken. An error in diagnosis, in this case, will have a serious effect on both mother and child.

This error, however, is often committed by practitioners otherwise skilful, but who, not having had an opportunity of feeling a shoulder

at the superior strait, cannot recognise it even when it presents itself to their observation. An accoucheur, for example, may practise ten, and even twenty years, and have, too, a tolerable share of obstetric business, without once meeting with this presentation.*

In most of the cases in which I have been called to terminate delivery in the presentations of the trunk, there has been a mistake with regard to the presentation; for it was not known until after the escape of the arm, when error is no longer possible. Almost uniformly, even, the practitioner, supposing that it was a presentation of the vertex, the descent of which should be promoted by stimulating the womb, had, before my arrival, administered ergot, which, of course, added to the difficulties and dangers of the operation.

This subject appears to me to be one of so much importance that I will mention, at the end of this article, some cases exemplifying the serious consequences of this mistake.

B. Differential Diagnosis.—We may, in the first place, confound the full presentation of the shoulder, that in which the acromion occupies the centre of the superior strait, with a variety of parietal presentation of the vertex; but the form of the abdomen, the difficulty experienced in reaching the presenting part, and the peculiar configuration of this part, will enable us to distinguish the presentation of the shoulder from that of the parietal, which is lower, and near which are to be felt the sutures, fontanelles, and that resistance which characterizes the head. When, therefore, we are assured that the shoulder occupies the superior strait, we should interfere. In this case,* the membranes being intact, two methods may be adopted: cephalic or pelvic version.

* Dr. Kirby sent for me October 18th, 1843, to see, in consultation with him, Mrs. E., who had been in severe labour for three days. Mrs. E. was twenty-six years of age, and in labour with her first child. Her uterus had acted with great vigour, but there was no progress in the delivery. She was becoming weak under the continued efforts of the womb, and it was very evident that some obstacle must have prevented the birth of the child, for the doctor assured me that her pains had been abundantly sufficient to effect delivery under ordinary circumstances. He likewise expressed his conviction that the shoulder occupied the superior strait; for, making a vaginal examination, I found his judgment perfectly correct on this point; and I moreover distinctly felt a loop of the umbilical cord, which had passed down between the shoulder and the uterine orifice. I could, however, detect no pulsations in it; and it was to be presumed, even in the absence of this fact, that the child had succumbed in consequence of the vigorous and long-continued, yet unavailing efforts of the womb. The waters had passed away about ten hours before I saw the patient. Concurring in opinion with Dr. Kirby as to the course to be adopted, at his request I proceeded to perform *version*, and bring down the feet. I encountered great difficulty in introducing my hand into the orifice (so strongly did it contract on the shoulder). I then desisted for twenty minutes, during which a solution of emetic tartar was administered to the patient. A tablespoonful of a solution containing two grains to the ounce was given every five minutes. Three doses produced nausea; and I again attempted the introduction of the hand, which was accomplished with ordinary facility. The feet were seized and brought into the vagina without difficulty, and I proceeded to complete the extraction. I encountered no obstacle until the head had reached the superior strait; in carrying my finger to this point, I discovered that the occipito-mental diameter of the head occupied the strait. My index finger was then introduced into the mouth of the fœtus, and with great difficulty I succeeded in bringing the chin upon the sternum, thus producing the movement of flexion. But, from the unusual size of the head, and its disproportion to the dimensions of the pelvis, I found it utterly impossible to extract it. From its excessive volume, the forceps could not be introduced, and the only alternative left was to diminish the head with the perforator, which was the more willingly resorted to, as ample evidence of the child's death had been furnished even before I commenced turning; but even with the aid of the perforator, much difficulty was experienced in completing the delivery. The head was truly enormous. I am under obligations to Dr. Kirby for his valuable assistance. The mother had a rapid convalescence.—Ed.

Cephalic Version.

Cephalic version is an operation by which we propose to bring the head of the fœtus to the superior strait when some other portion occupies this strait. It has been recommended both before and after the rupture of the membranes. It is, under both these circumstances, difficult to execute; it is favourable to mother and child in the former but not so in the latter case. It will be readily understood that spontaneous version, the description of which I gave in the commencement of this chapter, has caused authors to attempt the same result by means of external manipulations, when the membranes are intact. If the operation should prove successful in this case, it would render essential service to both mother and child.

In a word, as soon as the vertex is brought to the superior strait, the membranes should be ruptured, and the delivery will be as happy for the infant and mother as if the vertex had originally presented. We thus substitute for a presentation which, left to itself, would have sacrificed the child, and often, too, the mother, or which, being converted into a pelvic version, would destroy the child once in seven times — a cephalic version, artificial, it is true, but which, effected during the integrity of the membranes, admits of a perfectly natural expulsion.

In what way are we to obtain this result? M. Velpeau recommends that this substitution should be performed by external manipulations. I have seen M. P. Dubois and M. Colomb effect it in this manner; and I myself have succeeded, with my friend Dr. Devilliers, in a female in whom the fœtus enjoyed remarkable mobility. But, to perform this operation, there is required a combination of circumstances rarely found: the fœtus must possess great freedom of motion, the abdominal and uterine walls must be relaxed, thin, and free from pain, and the quantity of amniotic fluid small, in order that the hands may readily embrace the parts, and change their position with facility.

As soon as the accoucheur ascertains that the shoulder presents, he should at once cause the patient to assume the recumbent posture, and request her to moderate her efforts, in order that the membranes may not be ruptured until the complete dilatation, which would interfere with cephalic version, and which, also, in the event of failure, would render the conditions for pelvic version less favourable, in consequence of the discharge of the liquor amnii and the contraction of the womb.

This precaution being taken, an effort should then be made to ascertain the position; for, in order to bring down the head, we must know how it is situated. But I have already remarked that, before the rupture of the membranes, the vaginal touch cannot settle this point. What, then, is to be done? Happily, the circumstances which favour the operation will likewise enable us to ascertain the position; the hands, applied to the abdomen, can distinguish, in one of the iliac fossæ, a round, solid tumour, which is the head, and, in an opposite point of the uterus, and above, small movable parts, which are the feet. Auscultation, too, will be of service here: thus, we will hear the intensity of the pulsations of the heart in front and directly down-

ward, and they will also be heard in the iliac fossa opposite to the one in which the head is felt, while they cannot be distinguished near this latter.

When the accoucheur thinks that he has recognised the position, if the dilatation of the neck be complete, he can proceed. But why delay until the dilatation be complete, since the hand is not to be introduced into the parts for the purpose of extracting the fœtus? The external manipulations, and especially the efforts necessary to be employed on the shoulder, with two fingers applied on the membranes, may induce contractions, under the influence of which the membranes may rupture; and if the dilatation be not complete, and cephalic version prove impossible, the escape of the amniotic fluid will render any attempts at pelvic version extremely difficult. Therefore, only when the dilatation is complete and the membranes intact, must the operator, by means of external manipulations, attempt to bring the head to the superior strait, and push up the pelvic extremity; such is the rule given by M. Velpeau. He advises, also, to endeavour to engage the head with one hand, while, with the fingers of the other, an effort is made to remove the shoulder from the superior strait. This method is, in general, the easiest, and most frequently successful.

As soon as the change of presentation is accomplished, that is, when the head has taken the place of the shoulder, the hand of the accoucheur, applied externally, should maintain the fœtus in this position, while with the other hand, during a contraction of the uterus, he ruptures the membranes; the waters discharge, the head descends, and the delivery is as favourable as if the vertex had presented. But it is possible that the accoucheur may be in error as to the position, and, mistaking the pelvic extremity for the head, he may bring down the pelvis instead of the head. In this case, the same advantage would not be obtained as if the head had been made to pass to the superior strait; for, in delivery by the pelvis, one infant in eleven or twelve succumbs, whereas only one in fifty dies in delivery by the vertex. There is not, however, much to regret; if the pelvis had not been brought down, the membranes being intact, we would have been obliged to seek for the feet by introducing the hand and rupturing the membranes, and the life of the child would have been compromised once in seven times by this manual extraction. Therefore, when we cannot accurately recognise the position, we must not attempt cephalic version through the abdominal walls and membranes.

This operation is not always practicable, even under circumstances which appear to favour its execution; and when these circumstances do not present themselves, we shall often meet with insurmountable difficulty; it is, therefore, in such cases, preferable to have recourse to pelvic version.

Pelvic Version.

Pelvic version, practised at the moment the membranes are ruptured, is of easy execution, and extremely favourable to the child. Which hand is to be employed in this operation? The choice will depend on our knowledge of the position. But I have stated that it

is rarely possible to ascertain which shoulder presents, and the position of the shoulder, before the rupture of the membranes; how, therefore, are we to make choice of the hand?

In all cases in which the position is unknown, the right hand must be employed; it is introduced with proper care, and, having reached the membranes, it ruptures them, and penetrates as far as the feet, which it brings down into the vagina. If, which is rare when the fœtus enjoys much mobility, the hand experience difficulty in reaching the inferior extremities, and if it adapt itself imperfectly to the fœtus, we should endeavour to ascertain the exact position of the child, then withdraw the hand and introduce the other.

§ 2. *After the Rupture of the Membranes.*

After the rupture of the membranes, we must not think of cephalic version; pelvic version is the only resource.

Parallel between Cephalic and Pelvic Version.

In fine, as the conditions capable of favouring cephalic version do not exist, the fœtus has lost much of its mobility in consequence of the more or less complete escape of amniotic fluid, and then it would be extremely difficult, if not impossible, to remove the shoulder from the superior strait, and bring down the head. Moreover, the force which the accoucheur would be obliged to employ in this operation would frequently occasion the most serious accidents: rupture of the attachments of the vagina and uterus, and even rupture of the uterus itself.

And, again, are we to suppose that the fœtus would be in a more favourable condition, admitting that we could bring the head to the superior strait, than if we at once practised pelvic version? Assuredly not. The escape of the liquor amnii, and the complications which might accompany cephalic version, do not render it more favourable than pelvic version. In a word, delivery after the discharge of the waters, and after the multiplied and forcible efforts to bring the head to the superior strait, will not be as favourable to the child as spontaneous delivery by the vertex. Notwithstanding the opinion of Flamant, it is impossible to conceive that there is any parity between these two modes of delivery by the vertex.

In spontaneous expulsion by the vertex, the fœtus is protected from the force of the contractions by the interposition of the liquor amnii until the delivery is completed. In the delivery which follows cephalic version, the fœtus, during the entire period of the expulsion, is exposed to the immediate compression of the uterus; but this is not all. Procidencia of the cord, which so rarely complicates spontaneous presentation of the vertex, is often produced by the attempt made to bring down the head; and supposing we should succeed in this operation, we cannot confide the expulsion to nature, for the fœtus would succumb from compression of the cord. We should resort to pelvic version if the head have not descended in the excavation; and, in this latter case, to the forceps.

One or both arms may also be brought down at the same time with

the head ; and certainly, in this event, the accoucheur could not remain a simple spectator. The descent of only one arm with the head may, it is true, not impede spontaneous delivery under favourable circumstances ; but this accident requires the assistance of the accoucheur in the case which now occupies us, for the labour has already been sufficiently embarrassed by a combination of circumstances dangerous to both mother and child, without adding this additional difficulty, and we should, therefore, perform pelvic version. It is scarcely necessary to observe, that the presence of both arms would render this alternative still more imperative.

Again, after numerous efforts, painful and dangerous to the mother, and which often, by their consequences, prove fatal to the child, we are frequently obliged to abandon cephalic version, and substitute for it pelvic version ; this is what most commonly occurs. It cannot, indeed, be supposed that the circumstances under which we practise pelvic version will, then, be as favourable as if we had proceeded at once without loss of time, during which the uterus, firmly contracting on itself, opposes the introduction of the hand, and compresses the umbilical cord.

Supposing, also, that the head had been brought to the superior strait, the first contractions of the womb might cause it to leave the strait to give place again to the shoulder, in consequence of the tendency which a presentation has to reproduce itself, when it has once occurred.

But even if the head should remain at the superior strait, the contractions may be insufficient to terminate the delivery, and the accoucheur must then interpose, either by pelvic version, or by the forceps, according to the situation of the head.

In view of all these considerations, which must appear to every one full of reason, I do not hesitate to recommend, under these circumstances, pelvic version, resorting, after the example of MM. Velpeau, Dubois, and Moreau, to cephalic version only in cases in which there is deformity of the pelvis. In truth, pelvic version should always be preferred, because it is applicable to all cases ; it is more easily performed than cephalic version, even when all the conditions favourable to the latter are present, and it is more favourable both to mother and child. It may be performed at all the periods of labour ; it will alone suffice to determine the expulsion of the fœtus, and it remedies all the accidents which may complicate it. Thus, procidentia of the cord may manifest itself during the progress of this operation, as in cephalic version ; but what a difference ! In pelvic version, as soon as the feet are seized, the accoucheur terminates the delivery at once, and protects the child from the perils which menace it. Does the same thing occur in cephalic version ?

Cephalic Version in Pelvic Deformities.

After the rupture of the membranes, this operation should be resorted to only when the pelvis is deformed. Between the two evils, the choice should be for the least, and it is in this case alone that the performance of this operation becomes proper. When the contracted pel-

vis will permit the spontaneous descent of the head, the life of the *foetus* will be less frequently endangered than if it be brought down by the pelvic extremity; and the difficulties of the delivery will also be less for the mother. But the mother will derive important benefit from cephalic version when the contraction is very marked, and the perforation of the cranium and cephalotribe become indispensable. It will enable us to act on the head, and thus more promptly and certainly save the mother, than by mutilation of the *foetus* while it presents the shoulder.

A. Operation in Cephalic Version.—The rules laid down by Flamant and M. Velpeau for version when the shoulder is yet at the superior strait, are the following: When the position of the head has been accurately ascertained by the abdominal percussion and the touch, the accoucheur introduces two or three fingers into the maternal organs, and fixes them on the shoulder; he raises the shoulder, and endeavours to remove it from the superior strait by directing it towards the side corresponding with the pelvic extremity, in order to allow the head to descend, while, at the same time, he endeavours to bring the head to the superior strait, with the left hand applied to it, through the abdominal walls. This method is the most simple, least painful, and safest; it is the one recommended, under these circumstances, by M. P. Dubois, and which I have already suggested previous to the rupture of the membranes; unfortunately, it is very rarely successful after the rupture. The *foetus* does not enjoy sufficient mobility to allow itself to be displaced in this manner, and we are then obliged to have recourse to pelvic version. As to the second method, it merits all that I have said of cephalic version; its execution is accompanied with all the difficulties and dangers which I have enumerated above.

The hand, the palm of which regards the back of the *foetus* (the choice of the hand is not strictly indicated), penetrates entire the maternal organs; when it reaches the uterine orifice, it raises the shoulder, pushes it towards the iliac fossa, in which are situated the inferior extremities; it then seizes the head by the occiput, and engages it in the superior strait, and maintains it there until the contractions of the uterus have firmly fixed it in this point. The rest of the delivery is to be intrusted to the spontaneous effort, and in the absence of uterine contraction, the forceps must be applied. Finally, we must proceed as in cases in which a deformity of the pelvis complicates the presentation of the vertex.

If all the difficulties encountered in this operation be duly considered, it will not seem strange that, in our day, the operation should have been abandoned, even in cases of pelvic deformity, and that the attempts of the German school again to restore it to confidence have not met many admirers among us.

It is not, however, right entirely to proscribe it, as some accoucheurs have done; for it is evident that, if it be practicable in a case of pelvic contraction, both the infant and mother will be placed in more favourable circumstances than if pelvic version be resorted to (see *Pelvic Version*); and, therefore, it should be attempted in this instance.

Pelvic Version in Presentations of the Trunk.

The first care of the accoucheur, when called to a female in whom the shoulder presents, should be to ascertain precisely whether it be a presentation of one of the lateral regions of the trunk; whether it be the acromion that occupies the centre of the superior strait (full presentation); whether it be a small portion of the side of the neck and acromion (cervical variety); whether the portion of the side on which rests the elbow of the infant (cubital variety); whether a small portion of the back and acromion (dorsal variety); or, finally, the anterior portion of the chest and acromion (anterior variety); it matters not which of these presentations may occur, for the manner of interfering is the same. The diagnosis, however, of the presentation is easier in the varieties than in the acromial presentation. It being well ascertained which of the two lateral regions of the trunk presents—and this is never difficult after the rupture of the membranes—we should next inform ourselves of the relations of the fœtus to the womb, in order to know which shoulder presents, for the choice of the hand and the direction to give it in pelvic version are based on the exact knowledge of the position of the shoulder which presents.

A. *To ascertain which Shoulder presents from the Relations of the Fœtus with the Pelvis.*—To recognise the particular shoulder, we must understand accurately the position of the fœtus; for this purpose, the accoucheur examines the parts which occupy the superior strait, endeavours to distinguish them from each other, and to establish their positive relations.

If the finger encounter on the left of the acromion a hollow into which it passes with facility, especially if it can reach the ear, which is sometimes possible, the accoucheur should conclude that the hollow he feels is the space which separates the shoulder from the head, and that *the head is to the left*; if he succeed in passing his finger on the other side of the acromion into another hollow (the axillary space), this hollow always regarding the side in which the feet of the infant are situated, he concludes also, from this circumstance, that the *head is to the left*.

But this will not suffice to point out the particular shoulder which presents. In a word, in figures 210 and 212 the head is to the left, and yet in one it is the right shoulder, and in the other it is the left, which occupies the superior strait. Therefore, in order that the diagnosis may be complete, we should also know the situation of the back of the infant. If the intercostal spaces be felt posteriorly, if the scapula be in front, the back will also be in front, and in combining these two facts with the first, we shall have,

Head to the left,	} Right shoulder (fig. 210).
Back in front.	

If now, the head being still to the left, we feel the scapula posteriorly, and the sternum in front, the back will be posteriorly, and we shall have,

Head to the left,	} Left shoulder (fig. 212).
Back posteriorly.	

If, finally, the hollow of the neck be felt to the right of the shoulder, if the hollow of the axilla regard the left, the *head is to the right*; and as the scapula may be behind or in front, we shall have,

Head to the right,	}	Left shoulder (fig. 213).
Back in front.		
Head to the right,	}	Right shoulder (fig. 211).
Back posteriorly.		

In order more perfectly to recognise the particular shoulder which presents, as soon as we have been enabled to appreciate the different relations I have just enumerated, we should, in thought, place ourselves in the position we suppose the fœtus to assume.

But it is not always easy to recognise the relations of the fœtus with the womb, and, consequently, to know which shoulder presents. Fortunately, in those cases in which the shoulder is slightly engaged, or version easy, so accurate a diagnosis is not indispensable. In fine, all authors do not agree as to the choice of the hand: some recommend to employ the one corresponding with the shoulder that presents; others, on the contrary, the other. In view of this difference of opinion, it may be inferred that, when the operation is not difficult, we may proceed as well with one as the other hand, and, in contrary cases, we must do as well as circumstances will permit. If, however, I had an opinion, I should choose that corresponding with the presenting shoulder, for it seems to me to accommodate itself better with the parts we wish to seize.

If, therefore, we know that a shoulder occupies the superior strait, but do not know which, we should introduce the hand the use of which is the most familiar to us; if we encounter great difficulty in reaching the feet, we withdraw this hand, but not without previously exploring the fœtus, in order to ascertain its position, and to guide more accurately the other. Madame Lachapelle has given a precept on this subject which is altogether feasible; it consists in bringing down the arm with a view to learn more positively which shoulder presents. Then the diagnosis is perfectly simple, as I shall explain in a moment.

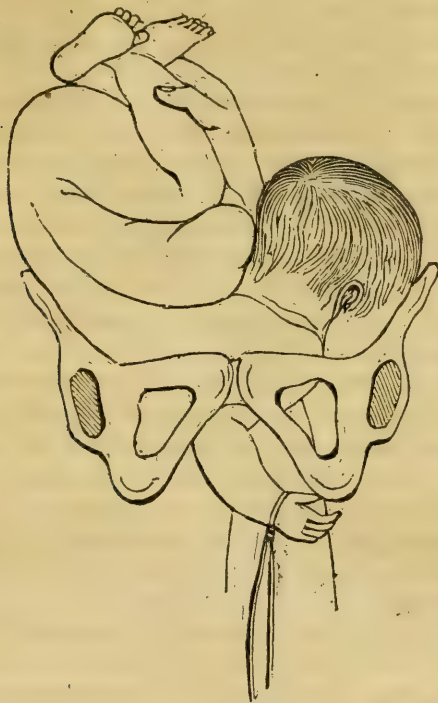
B. Operation.—Suppose we discover which shoulder occupies the superior strait, how are we to proceed?

Presentation of the Right Shoulder, Left Cephalo-iliac Position.

The left hand being placed on the fundus of the womb in order to maintain it in position, the right hand, properly lubricated, is introduced with care into the maternal organs, pursuing the axes of the straits, which it traverses. Arrived at the uterine orifice, it enters between the shoulder and sacro-vertebral prominence, without it becoming necessary to push aside the shoulder. Then, passing the hand along the anterior surface of the fœtus and the posterior wall of the womb, it penetrates as far as the feet, which are situated to the right; both of these are seized, if possible; but, in most cases, we can only bring down one. If a knee should offer itself to the hand of the operator, he should be content, and bring it down. The rest of the extraction is the same as in the second and third period of pelvic version; except

that the version is much more easy, and the head has not the same tendency to descend simultaneously with the pelvic extremity as in the presentation of the vertex.

(Fig. 210.)



Presentation of the Right Shoulder, Right Cephalo-iliac Position.

In this presentation, the position of which is the opposite of the preceding, the right hand must still be introduced; it must not pass behind the shoulder, but rather between the pubes and shoulder; the version here is somewhat more difficult, for the hand, being thrown back on the fore-arm, is in a more oppressive position than in the preceding case. It is to obviate this difficulty that certain authors have advised to pass the hand posteriorly, and arrive at the feet by rotating the pelvic extremity. In order that this advice may be followed, the uterus should not be too much contracted in the child; for, in this case, the hand could not be introduced between the fœtus and womb; but, in this case, if we raise the uterus with the left hand, with a view to reduce its anterior obliquity, we will succeed much better in passing directly to the feet with the right hand introduced in front, than by attempting to traverse so long a route.

Moreover, when this contraction is very violent, we can only reach the feet by a movement of direct progression, and by rotating the breech of the fœtus. (See fig. 211.)

In simple cases, however, we can succeed, no matter what method we adopt.

(Fig. 211.)



Presentation of the Left Shoulder, Left Cephalo-iliac Position.

The left hand is introduced between the pubes and anterior surface of the foetus, and directed to the right, where it seizes the inferior extremities, and brings them in front.

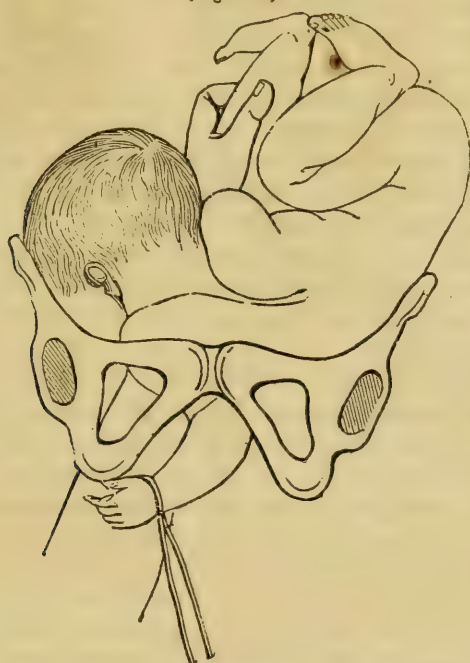
(Fig. 212.)



Presentation of the Left Shoulder, Right Cephalo-iliac Position.

The left hand is introduced posteriorly between the shoulder and sacro-vertebral prominence; the feet are seized to the left, and brought down posteriorly (fig. 213).

(Fig. 213.)



The Shoulder deeply descended in the Excavation, and the Arm out of the Vulva.

Pelvic version may be performed from the moment the shoulder occupies the superior strait, until it rests on the floor of the pelvis. But it must be remembered that the operation will be the more difficult in proportion as the descent is more complete.

For the methods to be employed, see the preceding article.

But what are we to do with the arm when it protrudes externally? Should we agree with some authors in considering its presence an obstacle to version, and then endeavour to return or amputate it? Before touching this very delicate question, which occasioned grave discussions in the medical world in 1825, in consequence of a method proposed by Doctor H  lie, of Domfront, in Normandy, it is indispensable to establish the differential diagnosis of the presence of the arm which accompanies the head, and of the procidentia of that accompanying the shoulder.

A. *Differential Diagnosis of the Presence of the Arm in the Presentation of the Head, and in that of the Shoulder.*—When the arm accompanies the head, as I have remarked, it descends at first much less profoundly; then, in following this arm, we recognise the vertex or face by their proper characters; while, in the presentations of the trunk, the arm, deeply descended, protrudes through the vulva, and the

shoulder is still tolerably high up. Finally, the signs characterizing the shoulder after the rupture of the membranes being easily recognised, it is scarcely possible to confound these two accidents.

When it is once established that the descended arm belongs to a particular shoulder, we should then, by means of this arm, proceed to ascertain the position.

B. Recognition of the Shoulder which presents by the Direction of the Thumb.—An infallible rule for recognising the presenting shoulder is the following: the palm of the hand which protrudes externally is turned upward towards the pubes, and the side which the thumb regards is the side corresponding with the shoulder which presents.

Thus, if the thumb look to the right, it is the right shoulder which occupies the superior strait, and *vice versa*.

It is impossible that this rule should lead us into error, whatever degree of torsion the arm may undergo; whenever the palm is brought in front, the side which corresponds with the thumb will be that of the shoulder.

C. But what is to be done with this arm? Should it be considered an obstacle, and its reduction or amputation attempted?

The presence of the arm will very rarely interfere with the operator. It would, therefore, be useless to attempt its reduction, even when this is practicable. It is scarcely worth while to allude to a precept, formerly promulged, and observed even in our day by certain ignorant matrons, of making tractions on the arm. These tractions, unless the fœtus should be extremely small and softened by putrefaction, and the pelvis unusually capacious, would have no other result than to render version more difficult, and even impossible, by bringing down the shoulder into the excavation. Monteggia is said, by means of this method, to have succeeded in bringing the head to the superior strait; although this be not impossible, yet the practice is altogether censurable; and, as M. Champion observes, we may conclude that most authors who have sanctioned this precept have confounded the presence of the arm accompanying the head with that of the arm which precedes the shoulder.

As to the amputation of the arm, although, in the immense majority of cases, we may practise version without being obliged previously to amputate the arm of the infant, it may, however, happen that the neck of the uterus, contracted spasmodically, may oppose the introduction of the hand, and thus oblige us to remove the arm for the purpose of affording more space.

Authors report some cases in which this amputation seemed indispensable; I have also found several observations of this kind, which are full of interest, in a very remarkable work published by M. Champion on this subject, and which he had the kindness to present to me.

It is true, however, that we are but rarely obliged to amputate the arm; and, moreover, far from proving an obstacle to version, its presence frequently facilitates it. In fine, the arm enables us to establish the diagnosis with precision; it serves as a guide to the hand of the accoucheur, and, by securing it with a fillet, we prevent its return, and,

consequently, we are not obliged to bring it down; and when we have succeeded in bringing the feet into the vagina, the tractions we make on the arm simultaneously with the feet facilitate the descent and rotation of the shoulders.

We should, therefore, place on the wrist of the infant a woollen fillet (it is less likely to bruise than a linen one), and the extremity of this fillet is to be intrusted to an aid; and then version is to be performed as if the arm did not occupy the vagina and uterine orifice.

As soon as the inferior extremities are seized, the assistant holds the fillet loosely during the period of evolution, so that the arm may enter partially the organs, and thus follow the movement imparted to the trunk. When both or only one foot has descended into the vagina, the operator then seizes the fillet with one hand and the foot with the other, and makes tractions on these two parts. The arm is thus brought out on the side of the trunk of the fœtus, and cannot pass up along the sides of the head, &c., &c.

Pelvic Version is Impracticable.

But the contraction of the body of the uterus, and the spasmodic contraction of the neck of this organ, may be so violent as to prevent the introduction of the hand, and the evolution of the fœtus, even after the hand has penetrated as far as the feet.

What, then, is to be done, in order to save the fœtus and mother, and render version practicable? It is, in this case, that anodyne injections, composed of fifteen, twenty, or thirty drops of the laudanum of Sydenham, embrocations on the abdomen, with equal parts of the oil of sweet almonds and laudanum, general bloodletting, and the warm bath, may prove useful.* M. Champion has also proposed, under

* I have frequently experienced the best effects from bloodletting and tartar emetic in solution, in cases of obstinate contraction of the womb; and this condition of the organ is not at all unusual in shoulder presentations, and for this reason: it may often happen that the practitioner is not called to the case until the arm has already descended into the vagina, and frequently, on his arrival, he finds it protruding through the vulva. The membranes, of course, have been previously ruptured, and the liquor amnii having escaped in greater or less quantity, the uterus is most usually, under these circumstances, found firmly contracting on the shoulder at the superior strait, preventing the introduction of the hand of the accoucheur. Ignorant midwives, too, in these presentations, are very apt to take hold of the arm, and make tractions on it, supposing that in this way they can succeed in accomplishing the extraction of the fœtus. It is, therefore, most important, in presentations of the shoulder, that the accoucheur should *early* understand the nature of the case, and proceed, as soon as the mouth of the womb is in a proper condition, to the delivery of the child by version. As to cephalic version or spontaneous evolution, they are to be classed among the *possibilities* of the lying-in chamber, and should never be suffered to take the place of pelvic version when this operation is practicable. This latter operation is sometimes attended with fatal consequences to the mother, resulting in rupture of the womb; and it often proves fatal to the child, in consequence of the rude and unskilful manner in which it is performed. In judicious hands, it is, under ordinary circumstances, a perfectly safe operation for both mother and child.

In consequence of the great pressure of the womb after the protrusion of the arm through the vulva, we will sometimes find the arm of a livid colour, and hence, if we were hastily to conclude from this circumstance that the child had succumbed, we might be induced to have recourse to embryotomy, and thus mutilate the infant; and the first evidence we should have of the error of our diagnosis, and that we were really cutting on the body of a living child, would be the motion of the fœtus in its feeble attempt to withdraw itself from the murderous grasp of the operator! I have on several occasions been called to cases in which it has been supposed that the child was dead, simply from the circumstance of the livid colour of the protruded arm.

A few months since, Dr. Shanks had an interesting case of this kind. He was in attendance on a strong, muscular Scotch woman, with her first child. She had been in labour

these circumstances, to inject a mucilaginous decoction of flaxseed and poppy heads into the uterus, as much for the purpose of tranquillizing as of lubricating the uterine walls; and also to place the patient on the side, or even on her knees and hands at the moment of operating, in order to protect the womb from the action of the abdominal muscles, and particularly to enable the accoucheur to pass the superior strait in a direct line, without bending the wrist and fore-arm, as is indispensable when the feet of the infant are in front and the patient on her back. If, by the aid of these means, version cannot be accomplished, the accoucheur, when the fœtus is living, should profit by the examples which nature furnishes us, and endeavour to produce artificially what she effects spontaneously. (*Spontaneous Evolution.*)

For this purpose, the shoulder being depressed and fixed under the pubes, the trunk of the infant resting on one of its lateral surfaces (fig. 205), the hand must be introduced into the concavity of the sacrum, and we should endeavour to draw down the breech by making tractions with the fingers fixed in the duplicature of the trunk, or, in other words, determine artificially the evolution of the fœtus in the concavity of the sacrum (see figs. 206, 207, 208, 209). If we fail with the fingers, we may employ the blunt hook, which we fix in the same place.

This method, which has often been followed by Peu and Monteggia, of Milan, and which is also advocated by Drs. Douglass and Robert Lee, is the only chance of safety to the infant.

We can very well understand, however, how uncertain this chance is; and, moreover, all the conditions necessary to facilitate this evolution should be present, otherwise we should not attempt the operation, nor should we suffer spontaneous evolution to occur, for the most serious results may ensue to the mother.

In fine, if the fœtus be of large size, and the pelvis possess only its normal dimensions, the forced passage of the infant, under these circumstances, will endanger more or less the organs of the mother, and even her life.

some hours before the doctor had been summoned. On his arrival, he found the uterus contracting with great energy, and, in making an examination, he discovered that the membranous sac was ruptured, and the shoulder occupied the superior strait. The doctor abstracted from the patient's arm about $\frac{3}{4}$ ii. of blood; this seemed to induce some slight relaxation about the uterus, but not sufficient to allow him to introduce his hand for the purpose of *turning*. In a short time the arm was expelled into the vagina, and the contractions of the uterus became very violent. At this period I was requested by the doctor to see the patient with him. She had then been in labour about twenty-two hours. The arm was quite livid, and, as the doctor informed me, had been so for the last three hours. In carrying my finger up to the orifice of the womb, I found this organ most firmly contracted on the fœtus, and it was impossible to introduce my hand. The patient was immediately bled to the extent of $\frac{3}{4}$ x. ounces, and a solution of tartar emetic, in the proportion of two grains to the $\frac{3}{4}$ i. prepared, of which she took a tablespoonful every five minutes until nausea was produced. The third dose caused slight vomiting, and the general relaxation which followed enabled me to introduce my hand and deliver by the feet. In a short time I extracted a healthy living child.

I have also seen cases in which, notwithstanding the protrusion of the arm and the escape of the liquor amnii, the uterus remained quite relaxed, offering very little impediment to the operation of version.

In September last, I was requested by Drs. Pratt and Leo-Wolfe to meet them in consultation in the case of Mrs. E., who had been in labour for twenty hours. The arm had passed into the vagina, and the uterus, although contracting with ordinary force, still permitted the easy introduction of the hand. At the request of these gentlemen, I proceeded to bring down the feet, and soon delivered the patient of a living daughter.—ED.

The desire to save the infant should yield to the paramount importance of preserving the life of the mother; and, again, this evolution is so often fatal to the infant, that, in resorting to it, we should compromise the safety of the mother for the object of bringing into the world a dead foetus!

Happily, also, in this case, it is very rare that the child survives the protracted labour; in the majority of instances it will have succumbed, and then the course to be pursued is plain. The accoucheur should make a section of the neck of the foetus, thus separating it from the trunk, which will enable him successively to extract these two divided parts.

I would even remark that, in a similar case, the impossibility of version being clearly established, I should not hesitate to perform embryotomy even if the child had resisted this contraction of the uterus; for although it may live while in the womb, in consequence of the circulatory relations by which it is united to its mother, yet it could not survive externally, on account of serious alteration of its organs.

In acting thus, we perform the operation at a proper time, while the mother has sufficient strength to encounter it, and to resist the accidents which may follow; and we abridge the sufferings of the mother.

Some authors have recommended, before resorting to embryotomy, when the child is living, to amputate the arm, in order to reach the uterine orifice more readily, and then practise version, and endeavour thus to extract the foetus alive. In several cases cited by M. Champion in the excellent work which he sent me, it became possible, after the amputation, to extract the foetus alive and save the mother; while before the amputation, it was impossible even to reach the feet. But after perusing these cases, I am inclined to attribute the difficulties of version rather to the contraction of the uterus than to the presence of the arm; and we may also conclude that if, after the removal of the arm, it was sometimes possible to reach the feet, this introduction of the hand was not in consequence of the amputation of the limb, but because the spasm of the uterine orifice had ceased spontaneously, under the influence of the means employed. But M. Champion himself is far from saying that the facts he reports will justify this practice as one to be generally adopted; but he simply asks whether the accoucheur cannot perceive in this method an extreme resource in very rare cases?

As for myself, basing my opinion on the authority of Madame La-chapelle and M. P. Dubois, I cannot admit that, under any circumstances, the presence of the arm can oppose version; and, moreover, having employed all the means proper to facilitate this operation, if it should still prove impracticable, I would ascribe the difficulty, not to the presence of the arm, but to the contraction of the uterus; and then I should not amputate the arm, but resort to embryotomy.

In fine, if the accoucheur perform embryotomy in order to save the life of the mother, he will not have a legal action brought against him; but let him, with the same object, bring into the world a living child deprived of a limb, and his reputation and whole existence will pay the penalty of such an act.

And, moreover, as I have already remarked, in these cases the viability of the fœtus is almost invariably compromised, when we have ascertained that version is not practicable. The conscience, therefore, of the accoucheur should be at rest; he may perform embryotomy; but, in this latter case, it sometimes becomes necessary to amputate the arm, in order to reach more readily the neck of the infant. I once saw M. P. Dubois under the necessity of adopting this alternative.

But, then, this amputation, which is to be followed by detruncation, is not accompanied by all the inconveniences I have just mentioned. We should, however, be careful not to have recourse to it, unless it become absolutely necessary; for we deprive ourselves, in removing the arm, of an excellent means of extraction as soon as the neck is separated.

Embryotomy in Presentation of the Trunk.

Two methods have been recommended in this case: either to perform the section of the neck, or that of the trunk through the centre.

A. Section of the Neck of the Infant.—The method of detruncation attributed to Celsus, and which I have, on several occasions, seen put in practice by M. P. Dubois, appears to me to combine the most advantages. I shall describe it as I have seen it performed by this skilful operator.

After having accurately ascertained the situation of the fœtus, he introduces the left hand into the maternal organs, whether the head be to the *left* or to the *right*; then, seizing a blunt hook with the right hand, he glides it along the hand that is introduced as far as the neck of the infant, on which he endeavours to fasten it. The left hand is now withdrawn, and he grasps the arm and hook with his two hands, and makes tractions, with the view of bringing the neck of the child as low down as possible. When the neck has descended far enough to become accessible to a cutting instrument, he confides the handle of the hook to an assistant, who is charged with holding it firmly; he then again introduces the left hand into the maternal organs, and fixes the extremity of the fingers on the point at which he intends to divide the neck. This being done, he seizes with the right hand the large curved scissors, of which I have already spoken, and passes them along the left hand as far as the integuments of the fœtus, which he cuts, little by little, in separating very slightly the blades of the instrument; an indispensable precaution, in order to avoid embracing the parts of the mother in the scissors. When the decollation has been completed, tractions on the arm will suffice to extract the trunk; then the head alone remains, which can be brought away by introducing a finger into the mouth, and bringing it through the largest diameters of the pelvis; or the forceps may be employed; but this instrument is very rarely necessary. It is in this way that I have seen M. P. Dubois practise the section of the neck, and not by fixing the neck of the infant with *the hand in form of a crotchet*; for it is quite impossible to bring the head sufficiently low with the hand alone to enable us to divide it. I am not surprised that this method should have proved unsuccessful.

It may, however, happen that, even with the aid of the blunt hook, we cannot depress the neck sufficiently to operate on it with certainty; in this case, the rule laid down by Davis should be adopted. I once assisted M. P. Dubois in performing this latter operation. After having fixed the hook on the middle of the trunk, he incised the trunk through its centre with the curved scissors. The successive section of the walls of the chest was made at first very gradually. Then, on reaching the spinal column, this was divided with one cut of the scissors; and after that he again proceeded slowly and gradually, being careful to place the extremity of the left hand behind the foetal parts, in order not to wound the organs of the mother with the scissors while terminating the section of the wall of the chest situated behind the pelvis. This operation, performed with extraordinary skill, was so prompt and harmless to the mother, that she did not utter a complaint; and she was delivered before some of the assistants, remote from the bed, were aware that it was commenced.

I shall insist, in terminating this important chapter, on the necessity of exercising on the dead foetus, especially in reference to the diagnosis of the presentations. How can we, with any degree of security, attempt to operate, when at any moment we are liable to commit an error which may destroy both mother and child?

How often is the accoucheur called to cases of presentation of the trunk which have been altogether mistaken from their commencement, after precious time had been lost in useless delay, and in the employment of violent measures!

It must not be supposed that these errors are confined to young men in the profession; I have seen them committed by respectable practitioners, who had mistaken this presentation, because they had never met with it in several years' extensive practice.

I was called during the last year to a lady, in whom the shoulder presented; the physician in attendance, an educated man, and one who enjoyed a certain reputation as an accoucheur in the quarter in which he resided, supposed at first that it was the vertex, and he waited three days for its descent, which, of course, did not take place, notwithstanding several doses of *ergot*, and the *application of the forceps*, which was likewise resorted to!

Evidently, this practitioner supposed the vertex presented, otherwise it would be difficult to explain his conduct. Administer *ergot*, when a mechanical obstacle existed at the superior strait, an obstacle which could only be removed by a change of presentation; and, finally, apply the forceps on the shoulder! As may be imagined, only one branch could be introduced, the pivot branch, posteriorly; as to the mortise branch, which he endeavoured to apply to the left and in front, after several successive and violent attempts, it was abandoned. During these efforts the child succumbed, but, fortunately for the mother, notwithstanding the time thus consumed and the administration of the *ergot*, the uterine contraction was not so violent as to oppose version, and the mother was thus saved. But, after a year of suffering, she was not restored to health, although attended by the most eminent accoucheurs.

After a phlegmon, which terminated in resolution, she was troubled for many months with a severe pain in the right iliac fossa, similar to that experienced during the attempts to introduce the right branch of the forceps. The true cause of these pains, which resisted every curative measure, and which for a long time prevented all motion of the right lower extremity, remained entirely unknown.

• It may be alleged, in extenuation of similar errors, that the vertex may be removed from the superior strait, and give place to the shoulder, founding this opinion on the fact that the opposite of this occurs in the presentation of the shoulder (spontaneous cephalic version). But between these two cases there is a wide difference: the head, when it occupies the superior strait, accommodates itself to the form of this strait, and the fetal ovoid to the form of the uterus; it cannot, therefore, be solicited to change its situation to give place to the shoulder. Such, however, is not the case with the presentation of the trunk. In this case, the fœtus, situated almost transversely, is obliged to accommodate its large diameter to the transverse diameter of the uterus; this organ permits this distension, but sometimes, also, it may react on the fœtus, and cause it to change its presentation. Again, the shoulder adapts itself badly to the superior strait; during a long time it is not fixed firmly there, and then, especially when it presents in the cervical or cubital variety, that is, when the head or pelvic extremity is near the superior strait, spontaneous or cephalic, or pelvic version may take place.

It therefore appears to me impossible that the vertex, when it occupies the superior strait *alone*, can yield its place to the shoulder, although the shoulder may give its place to the head. I do not believe that there is one authenticated case of the kind.

Such is not absolutely the case when the head is at the superior strait conjointly with the arm. This simultaneous presentation of the arm and head may gradually be converted into a cervical variety of presentation of the shoulder.

A fact which occurred to myself, and which I cite because I believe it will be instructive to others, although I am not exempt from reproach, has satisfied me of the possibility of this substitution of presentation.

About eleven years ago, in a lady who resided in the Rue Rivoli, and on whom I was in attendance as accoucheur, I recognised, through the membranes, the presence of the vertex: the result proved that I was not mistaken. The dilatation being complete, I ruptured the membranes, and immediately the arm descended with the head. At this period my mind was not imbued with the excellent precepts which I have since learned from the example and instruction of my learned master, and I thought that I was bound, at every hazard, to effect the reduction of the arm. This reduction not being always easy, particularly for one inexperienced in the obstetric art, I failed in it. I could not return the arm. Then, hoping that something might be gained by the contractions of the womb, I administered ergot with the view of stimulating the uterus to action. But whether my attempts at reduction, probably badly directed, had removed the head somewhat from the

superior strait, or whether this was effected spontaneously, the arm extended quite into the vagina.

Justly alarmed at this circumstance, I again introduced my hand, and endeavoured to reach the feet, but, owing to the strong contractions of the uterus, and too much timidity on my part, together with the intractable character of the patient, I could not succeed.

It became necessary to seek more skilful assistance. M. Moreau, my father, M. Taillefer, all successively attempted the version; but the contractions were so violent that they could not accomplish it. M. Moreau requested me to send for M. P. Dubois, of whose skill at that time I was entirely ignorant; M. Deneux, who was also present, feeling the head partially engaged at the superior strait, for it had not left it entirely, thought, with reason, that the only mode of terminating the delivery was to act on the head; he endeavoured, therefore, to bring it down with the forceps, but all his efforts proved useless. Finally, M. P. Dubois succeeded in applying this instrument, and effected the delivery; the child had succumbed, but the mother recovered perfectly.

“If ours were the period of honest admissions,” truly observes M. Champion, “what honourable practitioner, and, particularly, what accoucheur is there who would not have some revelation of this kind to make?”

It is, therefore, because I am convinced that the admission of a fault is more useful to the pupil than the recital of success, that I have not attempted to conceal my errors: 1st. In wishing, at all hazards, to accomplish the reduction of the arm, instead of relying on nature, as soon as I failed in my first efforts. 2d. In mistaking at first the substitution of presentation which I had occasioned, and confiding in nature when I should have practised version at the proper time.

This circumstance, however, will always be mentioned by me with pleasure, for it was on this day that I first had an opportunity to appreciate the great skill of M. P. Dubois, became his pupil, and completed under his guidance my obstetric education.

CHAPTER II.

ARTIFICIAL DELIVERY OF THE PLACENTA.

I HAVE already treated of the natural delivery of the after-birth; and it now remains for me to speak of the accidents capable of opposing its expulsion, and of those which sometimes complicate it.

ART. I.—UTERINE INERTIA.

In order that the relations which unite the placenta to the uterus may cease, it is necessary that the uterus should contract on itself, and its walls become diminished. When this separation does not take

place in consequence of inertia of the womb, what is to be done? We should be extremely particular not to take away the placenta until we shall have stimulated the contractility of the uterus by frictions on the abdomen, titillations on the lips of the organ, and by sustaining the strength of the patient.

In fact, if we remove the after-birth before having awakened the contractility of the uterus, we shall expose the patient to the consequences of a frightful hemorrhage.

It is rare that the inertia is protracted; in all cases we should delay until it has been overcome before removing the placenta, even when several hours shall have passed. This precept may appear to be in contradiction to that already given of bringing away the placenta artificially when one hour shall have elapsed after the expulsion of the child; but this rule is liable to certain exceptions, and uterine inertia is one of them. In fine, when the uterus remains inert, there is no danger that the neck, in contracting, will oppose the delivery of the after-birth if it be deferred. And it is especially to avoid this difficulty that M. P. Dubois recommends to effect its expulsion artificially, if the natural efforts be not sufficient at the end of an hour.

ART. II.—DEBILITY OF THE CORD.

Weakness of the cord, whether it depend on its slight resistance, or the abnormal insertion of its vessels on the membranes, is a circumstance which prevents our effecting the delivery by means of the cord. We are admonished of this fact, because the hand feels that, at every step, the cord gives way. This consciousness of the laceration of the cord is very manifest.

In this case, should we delay and confide the delivery to nature, or should we accomplish it artificially? We should at first intrust it to nature, but not for a period exceeding an hour; after this time, it might be followed by serious inconvenience; for if the contractions did not suffice for the expulsion of the placenta during the time we delayed for this natural effort, the neck of the uterus would contract on itself, and we should experience great difficulty in accomplishing the delivery, besides occasioning much suffering to the patient. Thus it appears to me to be much more wise in this case, when the pains felt by the mother, the contraction of the uterus, and the descent of a portion of the placenta give us reason to suppose that it is completely detached, not to delay longer than an hour, and introduce the hand along the cord, grasp the placenta, which we find partly descended, and extract it. By pursuing this mode, we often avoid much difficulty, prevent a too considerable discharge of blood, kept up by the presence of the placenta, and, finally, we complete the labour, and allow the patient to be changed, and placed in her bed to seek repose. If the resistance should be very great, for fear it may depend on an adhesion of the placenta, we should wait one hour; and, at the expiration of this time, the hand should be introduced, and the cause of the obstacle ascertained.

In all cases, when the cord is frail, we should not make use of tractions on it, not that the rupture of the cord would be followed by incon-

venience—for whether it be attached or not to the placenta, it is perfectly useless so far as the delivery is concerned, on account of its weakness—but because this separation of the cord is always considered as an evidence of want of skill on the part of the accoucheur, and it also creates alarm among the assistants.

ART. III.—SPASMODIC OR IRREGULAR CONTRACTION OF THE UTERUS.

After the expulsion of the fœtus, the organic contractility of the uterus is much less intense; it is more particularly the contractility of tissue, or the retraction of the organ, which accomplishes the separation of the placenta and its expulsion. It is, however, true that there are slight uterine contractions, which contribute to the expulsion of the after-birth.

This organic contraction, and this contractility of tissue, manifest themselves in every viscus under ordinary circumstances. But things do not always pass in this manner; certain portions of the uterus, for example, may remain inert, while others may be acted on by the two species of contractility combined; and then, according to the portion of the organ which is the seat of this anomaly, the placenta may be thrown from its cavity, or it may be retained there.

The external orifice of the uterus never presents this spasmodic condition; it is always found soft and relaxed after the expulsion of the fœtus.

But it is not so with the internal orifice, which almost invariably retracts after the delivery of the child, and often even is affected with spasm. The body of the uterus may also participate in this state of spasmodic contraction. It will be seen that, in this latter case, the spasmodic contraction of the entire body of the organ, when the internal orifice is not contracted, far from opposing the delivery of the placenta, will, on the contrary, determine it. In order that this spasmodic condition of the body may prevent the delivery, it becomes necessary that all the parts of the organ should not be simultaneously affected; that one part should be relaxed, while the other contracts spasmodically.

Thus, therefore, *spasmodic contractions* of the internal orifice, *partial* and *spasmodic contractions* of the body of the uterus, are two complications, the first of which will retain the placenta in the cavity of the uterus, and the second will cause its confinement to a certain part of this organ.

§ 1. *Spasmodic Contractions of the Internal Orifice.*

When all the signs which announce the separation of the placenta become manifest, when the time has passed in which we should suppose this separation had taken place, and when strong tractions made on the cord have no effect, we should proceed at once to discover the cause of the difficulty. If it be occasioned by the spasmodic condition of the internal orifice, the finger of the accoucheur, after passing the external orifice, which is soft and open as it were, encounters the superior portion of the uterine neck, which is strongly contracted and closed. Sometimes, however, when this condition is not manifested until after

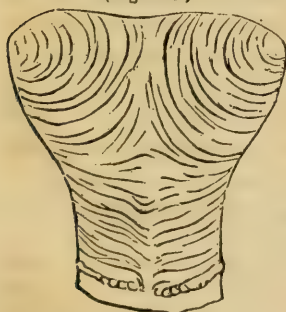
the descent of a portion of the placenta, we reach the internal orifice less readily, but we feel very distinctly that this portion of the placenta is strangulated circularly.

The condition of the neck is, in general, only temporary ; time will ordinarily be all that is required to overcome it. But if, after four or five hours' delay, it should still continue, and even before this time in the event of any accident, we should act. Ten, fifteen, twenty drops of laudanum should be administered in injection, narcotic embrocations on the abdomen, and bloodletting if there be plethora ; finally, if these measures fail, we should introduce the hand, well lubricated with belladonna ointment (one fifth of the extract to four fifths of hog's lard), entering very gradually one finger at a time, and forcing with great care the resistance of the neck, and, at the same time, compressing the uterus with the other hand placed externally ; then we should extract the placenta.

§ 2. Irregular and Spasmodic Contractions of the Body of the Uterus.

The separation of the placenta and its expulsion are accomplished by a contraction of the whole of the uterus ; but, as I have already remarked, certain portions of the organ may remain relaxed while others contract ; and thus, if the portion on which the placenta is inserted remains inert, while all the other parts of the uterus contract spasmodically, the placenta becomes enclosed in this uncontracted portion ; this is what is called the *enchatonnement* of the placenta. This may be produced likewise in another manner, by the contraction of only one portion of the uterus, which constricts the organ in its centre. The disposition of the uterine fibres explains very accurately this fact. We see, in fig. 214, on each side of the organ, concentric circular fibres at the orifice of the fallopian tube.

(Fig. 214.)



Now let us suppose that the placenta is inserted on one of these muscles, which is not at all uncommon, and that the circular fibres, the most remote from the orifice of the tube, should contract spasmodically, the after-birth will be enclosed in this species of cavity, as a stone in the beazle of a ring (*dans le chaton d'une bague*).

It may very well happen, in this case, that this circular ring is the only part of the organ that contracts, while all the other portions are in a state of relaxation.

The conduct to be pursued is the same as in the preceding case ; except that, if the spasmodic condition resist the opiates, &c., &c., and the use of the hand be indicated, we should not, if possible, force the contracted portion with the whole hand ; one or two fingers only should be introduced into it for the purpose of withdrawing the placenta.*

* I do not think this advice of Dr. Chailly will always be found useful in these cases ; at least, my experience points out the necessity of a different practice. In this peculiar spasmodic condition of the uterus, I have never found anything answer so promptly and effectually as breaking down, if I may so speak, the spasm of the affected part by fatiguing the muscular fibres, and this object can be accomplished in the following manner : the hand is

This accident is often complicated with adhesion of the placenta; and, under these circumstances, it becomes necessary to introduce the hand into the constricted portion, in order to effect the separation of the placenta with the extremity of the fingers.

(Fig. 215.)



ART. II.—ABNORMAL ADHESIONS.

The abnormal adhesions, which unite the placenta to the uterus, may be more or less extensive, and more or less solid. This accident is known by the following signs: notwithstanding the combination of all the other circumstances favouring the expulsion of the after-birth (such as contractions of the uterus, &c., &c.), tractions made on the cord do not produce any result; and the hand applied to the hypogastrium during these tractions, distinctly perceives that the uterus is drawn down. If the uterine contraction were less active, this hand, instead of perceiving that the whole uterus had descended, would, on the contrary, find that only a portion of the organ had become depressed.

When, by these signs, we suspect an adhesion of the placenta, we should, before verifying the fact by the introduction of the hand, endeavour to excite the contractions by frictions on the abdomen, titillating the neck of the organ, and then resorting again to tractions, proportioning them to the firmness of the cord.

It is not until these repeated attempts have failed, and after the lapse of an hour, that we should introduce the hand into the uterus for the purpose of ascertaining precisely the nature of the obstacle, and immediately remedying it before withdrawing the hand.

The hand is introduced into the organs with all possible precaution, following the umbilical cord made tense by the other hand: in this way we shall arrive directly at the placenta, without groping in the dark.

As soon as the hand has reached the placenta, it endeavours to discover whether a portion of this organ is detached, and it is at this point that it commences the completion of the separation.

The method which, in this case, should be employed, consists in

to be introduced into the cavity of the uterus in a *conical form*, and this form is to be maintained while the hand remains in the cavity; it is to be passed up to the constricted portion, and the fingers, representing the summit of the cone, are made to push gently, but firmly, against the centre of the contracted orifice; equable and continued pressure will thus break the force of the spasm, and the after-birth can then be removed without difficulty. But it occasionally happens that the hand becomes so severely cramped, and the resistance of the constricted portion is so great, that the accoucheur is under the necessity of withdrawing the hand without accomplishing the object. Under these circumstances, I have twice had recourse to a method, which I do not remember to have seen mentioned by any author, and to which I attach very great importance. It is this: I take a small piece of burnt sponge, of a conical shape, well enveloped with patent lint, and completely saturated with sweet oil, and afterward covered with belladonna ointment; this I enclose in the hollow of my hand, and then carrying the hand into the uterus, I apply the apex of this sponge to the constricted orifice, and by firm and properly-directed pressure, allowing the sponge to act on the principle of a wedge, the spasm is overcome, and all difficulty is at an end. I submit this method to the test of future trial, believing, as I do, that it will be found to answer a valuable end.—

Ed.

(Fig. 216.)



seizing the detached portion with the full hand, and drawing on it, in order to detach the rest; or, if the adhesions do not yield to these efforts, they must be broken up by the nails, in acting always on the placenta, and keeping as remote from the tissue of the uterus as possible. This is the only mode of effecting the separation.*

In this operation, we should be careful not to detach the parts which adhere too firmly, and which would be separated from the rest of the placenta, for fear, in extracting them, we should lacerate the tissue of the womb. These isolated cotyledons become gradually detached themselves, and are expelled in fragments, or with the lochia.

If the adhesions should be intact, we must introduce the hand between the membranes and the surface of the uterus; and if we be positive as to the point at which the placenta commences, we should effect the separation by beginning at the circumference of this organ; if there be any doubt, it would be more advisable to commence from the centre to the circumference: for this purpose, we should lacerate the placenta in the neighbourhood of the insertion of the cord, introduce the fingers into this laceration, and thus, little by little, accomplish the detachment of the placenta.

If, in consequence of too intimate an adhesion, we should be obliged to leave some portions of the after-birth in the uterus, we should for several days examine the patient, and ascertain whether their parts are detached; and if so, they should be seized with the fingers. We should also endeavour to provide against the dangers of the absorption of these putrified masses. With this view, there should be frequent vaginal injections with a weak solution of the chloride of lime. Injections into the womb should be composed of a decoction of marsh-mallows, and should be administered with great caution, and in small quantity, by the accoucheur himself. Indeed, without an absolute necessity, I should abstain from these latter injections. M. Housman has reported several cases in which serious accidents were occasioned by the passage of the fluid into the abdominal cavity through the fallopian tube. I also observed, at La Clinique, a similar fact, from an injection thrown into the womb; the patient experienced of a sudden severe pain in the right iliac fossa; all the symptoms of local peritonitis manifested themselves at this point; but they were combated, and the patient recovered.

* Let me here caution the student not to fall into a common error in regard to the retention of the placenta. It is not unusual for the inexperienced practitioner in midwifery to refer every case of detained placenta to *morbid adhesions, hour-glass contractions, &c., &c.* I have repeatedly been sent for to remove the placenta, when one of the above conditions was supposed by the physician in attendance to be the cause of the difficulty; and on introducing my finger into the vagina, I found the placenta protruding through the mouth of the womb, and all that was necessary to effect its expulsion was to take it away with the hand. *Hour glass contraction and morbid adhesions* are comparatively rare, and it will be well to keep this fact in memory.—Ed.

ART. V.—ACCIDENTS IN THE DELIVERY OF THE PLACENTA.

Hemorrhage, inversion of the womb, and laceration of the tissue of the uterus, are the principal accidents capable of complicating the delivery of the after-birth.

§ 1. *Hemorrhage.*

Hemorrhage, after the expulsion of the fœtus, may precede, accompany, or follow the extraction of the placenta; it is always occasioned by uterine inertia. It is a most formidable accident, which, in a few minutes, may cause the death of the patient. The accoucheur, therefore, as has been remarked, should not leave his patient immediately after the delivery of the after-birth; for *two hours* afterward he should remain with her, in order that in an instant he may be ready to arrest the hemorrhage if it should occur.

a. *Diagnosis.*

Hemorrhage may be external or internal.

A. *External Hemorrhage.*—The diagnosis of external hemorrhage is very simple; in fact, the discharge of blood externally sufficiently characterizes the nature of the accident. We should, however, be accustomed to appreciate the quantity of blood which a female ordinarily loses after the removal of the placenta (it is considerable), in order that we may not mistake this normal discharge for hemorrhage, and not, on the contrary, remain passive in consequence of regarding a veritable flooding as nothing more than a physiological result. If, after the discharge of blood which follows the placenta, there should still be an abundant flow, if the pulse become weak, and the face pale, it is not possible to misunderstand that there is really hemorrhage, which requires prompt treatment.

B. *Internal Hemorrhage.*—When coagula, closing up the mouth of the womb or vagina, prevents the blood from passing out externally, it accumulates in the cavity, which it distends, and the female becomes pale, her pulse falls, and she grows more or less faint. In this case, we must distinguish accurately as to the cause of these symptoms. Thus, for example, the abdomen may become enlarged from an over-distended bladder, and the weakness of the pulse, pallor of countenance, and syncope, may also depend on the rapidity with which the blood leaves the head, in order to pass, immediately after delivery, into the vessels of the lower portion of the abdomen.

The touch and abdominal percussion will soon point out the true cause of these troubles.

In fact, whether the hemorrhage be internal or external, the only mode of ascertaining its nature, before it has become very alarming, is to pursue the course I have already indicated, and which I shall again call to the mind of the pupil.

Immediately after the expulsion of the fœtus or placenta, we take a cautious survey of the patient, and inquire whether or not she feels any blood passing in abundance from her; and we should also watch the pulse. If there should be the slightest ground for apprehension, we

should at once proceed to examine the nature of the case, by inspecting the napkin which has been applied to the vulva, and seeing whether or not it is saturated with blood.

The condition of the uterus should also be an object of particular attention with the accoucheur; with the hand applied to the hypogastrium, he will ascertain whether this organ is globular, resisting, and but little developed, or whether it is not properly contracted.

b. *Treatment.*

When hemorrhage takes place after delivery, the cause is the first object to be combated. For this purpose, while we send for some ergot,* we should provide napkins, compresses, a bucket of water with

* Ergot should never be considered among the *heroic* remedies in the treatment of uterine hemorrhage after the birth of the child. Some practitioners are in the habit of relying on it as an all-sufficient agent in these cases, but they are in error. In profuse hemorrhage, death may ensue before the ergot can act. Something else; therefore, must be done in these trying emergencies. Hemorrhage, after the expulsion of the child, is either *external* or *internal*. In either case the indication is the same; *the uterus must be made to contract*. This object will be best effected by introducing one hand into the cavity of the womb, carrying it, if possible, to the point of the organ, to which the placenta is yet partially attached, or from which it has been separated. Then with the broad surface of the posterior portion of the fingers pressure is to be made directly on the bleeding vessels, while, with the other hand applied to the abdomen, counter pressure is to be employed. In this way, the uterus will frequently be made to contract, and the hemorrhage will at once cease. Together with the pressure, the cold dash is an invaluable remedy. Let iced water be thrown from a height on the abdomen; and this is to be repeated successively until contraction is induced. I have occasionally found great benefit from grasping a small piece of ice, and introducing it into the womb; the contact of cold thus suddenly applied will sometimes produce immediate contraction of the organ.

It has been remarked by a writer on midwifery, that no physician should have the hardihood to cross the threshold of the lying-in chamber who is not prepared promptly and effectively to manage every placenta case that may by any possibility present itself. This is the language of that emphatic, lucid, and practical author, Dr. Gooch. I respond most heartily, with all consciousness of its truth, to the value of this sentiment; and I would say to those who have never yet been engaged in the practice of the profession, that if there be any one thing more than another, in the whole routine of professional duty, calculated to strike terror into the heart of the practitioner, and for a moment paralyze his best energies, it is a case of *flooding* after the birth of the child. One moment's hesitation or doubt on the part of the practitioner, and death speedily terminates the scene. Nature has opened her floodgates, and if they be not instantly and skilfully closed, all chance of rescue is at an end. Never, since I have been a practitioner of medicine, have I had my feelings so wrought upon, and my sympathies so freely excited, as in a case in which I was recently engaged. It is a sorrowful, melancholy tale; yet it is so full of instruction, that I cannot forbear narrating it, in order that wholesome admonition may be derived from its recital.

A short time since, I was sent for in great haste by a gentleman to meet him in consultation in the case of a lady who had just been delivered of a child. As soon as I reached the house, he informed me that half an hour before my arrival he had delivered his patient of a fine son; and he observed that there was another *fœtus* in the womb. Finding his patient growing weak, he thought it advisable to send for assistance. This was all the information I received, when, on being introduced into the room, I witnessed a scene which I have not language to describe. The husband and relatives were gathered around the bed of the dying woman; her two little children, who had been asleep in an adjoining room, awakened by the confusion of the night, became alarmed, and rushed into their mother's chamber. As soon as I beheld the patient, I became convinced that all was over. There she lay, pulseless and speechless, with death written upon her countenance. In placing my hand on the abdomen, I found it immensely distended; it was soft on pressure, and in an instant I arrived at my diagnosis. It was a case of *internal uterine hemorrhage*. Without a moment's delay, I introduced my hand, for the purpose, if possible, of bringing on contraction of the womb. I found the placenta detached, and lying immediately over the mouth of the uterus, thus effectually preventing the escape of blood externally, and leading the practitioner to a fatal error as to the actual condition of his patient. As soon as I had introduced my hand into the womb, the unfortunate woman seemed to experience a momentary revival. She opened her eyes wildly, gazed on those around, asked for her children, and instantly expired!

Comment here can scarcely be necessary. Error of judgment as to the nature of the difficulty had thus suddenly swept from earth an interesting woman; it had converted a house of joy into one of mourning, and had deprived the young and helpless of a mother's love and devotion. Such scenes are indeed agonizing, and are calculated to make a lasting impression on the minds of all who appreciate the necessity of accurate knowledge and the fullness of professional responsibility.—Ed.

a pitcher; and, if the hemorrhage be internal, we should immediately introduce the hand into the uterus and remove the coagula and blood which it contains. This introduction of the hand likewise has the advantage of soliciting the contraction of the walls of the uterus. At the same time, the other hand, applied to the hypogastrium with the same object in view, makes frictions on the womb.

As soon as the hemorrhage has become external, or if it were so from the first, such is the conduct which the accoucheur is to pursue.

The pillows and bed-covering should be immediately removed, the breech should be slightly raised by a sheet folded several doubles; the upper portion of the body alone should be kept warm, in order to invite as much as possible blood to the organs essential to life; but the inferior portion of the body should be covered simply with a sheet, and the windows should be open.

While the accoucheur is making frictions on the hypogastrium, he should administer *si.* of ergot in a small quantity of water. At the same time, he directs the assistants to place cold compresses on the legs and thighs; and if the frictions should be insufficient to bring on uterine contraction, he must not wait for the action of the ergot, but immediately, with the extremity of the fingers of one hand, press on the abdominal aorta before its bifurcation; and he thus exerts with this hand, on which is superposed the other, a compression, which, when well made, almost invariably arrests the hemorrhage.

This means, which we owe to M. Baudelocque, nephew, and whether he originated it or not matters little, is one of the most precious discoveries with which the obstetric art has been enriched.

M. d'Ornelas has quite recently cited in his thesis several cases of success obtained by this remedy.

My father had recourse to it once with the happiest result; and in two instances I have also been enabled to preserve the lives of two women, who certainly would have died had it not been for this valuable agent.

In one of these patients I made use of this compression for nearly two hours, when M. P. Dubois, whom I had sent for, arrived and witnessed the fact.

The effect produced by this compression is so manifest, that the flow of blood is immediately checked; and if, by a movement of the patient, the aorta should escape from the hand, the hemorrhage recommences immediately.

This compression, as is well understood, is not a curative remedy; but it permits us to gain time, a result the more important in an accident so fearfully rapid as uterine hemorrhage.

Finally, while this compression is faithfully persevered in, and the flooding is thus checked, we must employ with activity the other means which are calculated to arrest it definitively. Cold water should be thrown into the rectum; two or three drachms of ergot, in two or three doses; the cold compresses to the legs and thighs should be constantly renewed, and an assistant should make continued frictions on the uterus.

The compression of the aorta will be the more easy in proportion

as the patient is less loaded with fatty matter ; but, even when the female is very corpulent, it still may be practised with facility, and successfully. In fine, immediately after the expulsion of the fœtus, the uterus descends, and there is a space between the fundus of this organ and the intestines, which, for a period of nine months, having been pressed up towards the superior portion of the abdomen, do not immediately after the delivery resume the place they occupied before pregnancy. It is into this space that the hand passes with facility for the purpose of making the compression.

It is sometimes extremely fatiguing to continue this compression, and we are occasionally obliged to be relieved by an assistant.

C. Before the delivery of the placenta, a very serious flooding, if not remedied, may take place from the placental extremity of the cord.

This accident is, however, very rare, and the mode of arresting it perfectly simple ; it consists in placing a ligature on the cord.

§ 2. *Inversion of the Uterus.*

Inversion of the uterus may be occasioned by the spontaneous delivery of the placenta ; but, much more frequently, this accident results from tractions made on the cord while adhesion still exists between the placenta and uterus. This inversion may be incomplete, and then the touch and abdominal percussion will disclose the nature of the difficulty. If, on the contrary, it be complete, we feel and see between the lips of the vulva a round, rugous, blackish tumour, composed of the inverted uterus.

When the inversion is incomplete, the hand should be introduced cautiously, for the purpose of raising the fundus of the inverted organ.

If it be complete, the extremity of the fingers, covered with a linen, must be applied to the fundus of the organ, and gradually return it, until the reduction be accomplished. If, in this case, the placenta were still adhering to the uterus, it should be immediately detached, and the womb reduced ; but we should not attempt the reduction of the uterus and placenta together, for the reduction, in most cases, would be impossible, or, at least, would require great effort. Finally, what motive could there be for the simultaneous reduction, when we should afterward be obliged to introduce the entire hand for destroying, artificially, the adhesions ?

FOURTH PART.

CHAPTER I.

ACCIDENTS FOLLOWING DELIVERY.

In this fourth part I shall treat of the accidents which may complicate the puerperal period, and of the diseases incident to the infant soon after its birth; but, in a work like this, it will be at once seen that I cannot give a full description of these accidents; and that I must, therefore, limit myself simply to certain views, which will enable the young practitioner to establish the diagnosis of these maladies, and combat them by proper treatment.

ART. I.—DERANGEMENTS OF THE MILKY SECRETION.

Derangements in this secretion are much more common in women who nurse than in those who do not. The contrary opinion, however, prevails; but experience every day proves that it is entirely unfounded.

These derangements are, galacterrhea, agalaxy, excoriations, fissures, engorgement of the breast, inflammation, abscess, and indurations, which are the consequences of inflammation.

§ 1. *Galacterrhea.*

A. *In the Female who does not nurse.*—Galacterrhea, or excessive milky secretion, in a female who does not nurse, is an accident which merits all the attention of the accoucheur.

This accident, however, is never so marked the first day of the milk fever as to require any other treatment than the means usually resorted to during this fever: the most absolute repose of body and mind, cold drinks, diet, and warmth applied to the breasts by means of cards of cotton. But if the fever should continue the second day, and the breasts be very tense, tumefied, and painful, it will be necessary to moderate the activity of this secretion.

The patient must be placed on absolute diet, and flaxseed poultices applied to the breasts; then, in order to increase the other secretions, the patient should be kept warm, for the purpose, if possible, of promoting perspiration; but the secretion of the mucous membrane of the intestines must particularly be kept up by gentle laxatives, such as castor oil, or calomel (one drachm divided into ten powders), every two hours. Seidlitz water may also be employed with advantage. It would even be useful to administer a purgative injection; for drink, the patient should take nitrate of potash and warm water, ten grains to the pint.

This regimen must be continued as long as we have any apprehensions about the breasts.

B. *In a Female who nurses her Child.*—Galacterrhea in a female who nurses never constitutes a disease, except under circumstances which I shall immediately mention.

In a word, it is very rare that the secretion of milk is more abundant than is required by the wants of the infant, if care should be taken to put the child to the breast before the milk fever. It is always prudent to put the child to the breast a few hours after its birth, whether the secretion of milk be sufficient or not. If it cannot extract the necessary nourishment, other can be supplied; but the very suction exerted by the mouth of the infant will determine an easy action in the mammary gland, which would not otherwise have manifested itself for forty or sixty hours afterward, and which would then have been excessive.

What follows when, according to the advice of some physicians, the child is not put to the breast until the secretion of milk has occurred? In the first place, the breasts swell, then the nipple becomes effaced, and the child cannot take hold of it in order to nourish itself, and, at the same time, diminish the quantity of milk.

This accident, notwithstanding all precautions, may manifest itself in women who nurse, and especially in those whose nipple does not present sufficient prominence to enable the child to seize it. Thus, with a view to obviate all these inconveniences, and to facilitate as much as possible the natural secretion, I have adopted a plan which has proved very successful: it consists in taking, for the first few days, a nurse whose child is more vigorous than the newly-born infant. When we desire to put the latter to the breast, we place, in the first instance, to it the infant of the nurse, which, being stronger, brings out the nipple, causes the milk to flow to the breasts, or disgorges them, depending on circumstances; and when everything is thus properly prepared, this child is removed, and the other applied to the breast in its place; it then takes the nipple without difficulty. If the secretion of milk be not sufficiently established to afford ample nourishment to the infant, the nurse puts it immediately to her own breast as soon as it has left that of the mother.

This very simple method, and which can be resorted to by any one, prevents the engorgement of the breasts, and does away with the necessity of artificial nourishment. It should be continued until the mother is perfectly able to nurse her infant; generally five or six days will suffice.

If, however, no precautions should have been taken to prevent this excessive secretion of milk, or if means are not adopted to make this activity of the glands useful, galacterrhea may become a disease, when, from certain circumstances, the child ceases to take the breast, or cannot extract a sufficient quantity of milk. A succulent regimen, constipation, and gastric derangement, serve to favour this excessive secretion of milk, which, in some women, may also be produced by irritation of the mammary gland, frequently followed by a considerable engorgement, if the milk should not escape externally, either naturally or by the suction of the child.

But there is one case particularly in which galacterrhea may mani-

fest itself; when, for example, a female, having nursed her infant for the first few days, finds herself under the necessity of abandoning it; thus, the excitement already occasioned by the suction of the child continues after this latter has been withdrawn from the breast, and the milk which has been secreted, being no longer taken from the breast, causes a painful engorgement.

The treatment for galacterrhea consists, in the first place, when there is merely a superabundance of milk, in extracting the superfluous part by means of a pump, or by the application of young pups, as is often done in the country; then the quantity of nourishment should be diminished, and, in severe cases, absolute diet enjoined, and the other secretions increased, &c., &c.

Agalaxy is much more serious, especially when the female is obliged to nourish her infant. *Agalaxy*, or defective milky secretion, may be occasioned by the following circumstances: an unnatural conformation or absence of the nipple, schirrus or morbid atrophy of the breasts, a too abundant secretion of the lochiæ, diarrhœa, immoderate secretion of urine, copious perspiration, impoverished diet, irritation of the important viscera, excesses of all kinds, venereal and other affections, protracted nursing, excessive youth or age of the female, appearance of the menses, and, finally, pregnancy.

On the part of the infant, improper conformation of the lips, tongue, or velum palati, any other bad conformation and great debility, which prevents the child from taking hold of the nipple, are also causes of agalaxy. And it is to these causes that we must direct our attention, if we wish to bring the milk to the breasts. In the first place, a mild regimen, and even abstraction of blood, when the female is plethoric, or affected with inflammation of some of her viscera, will be indicated. If, on the contrary, she be debilitated, it will be necessary to prescribe a tonic regimen, and repose, moral as well as physical. Should the nipple be badly formed, we must ascertain whether it is capable of erection, so as to afford the child an opportunity to seize it, for very frequently it may develop itself under the influence of slight titillations and the suction of the child. As to the deformities of the child, they should be remedied, if possible. But there are cases where the evil is irremediable for both mother and child. When, for example, the deformity of the latter is so marked as to prevent the possibility of suction; then the only resource will be artificial nourishment, of which we shall speak hereafter. Should the mother labour under some organic affection of the breasts, be too old, become pregnant, or have a return of the menses,* it will then be necessary to provide a nurse for the child.

§ 2. Engorgement of the Breasts.

Engorgement of the breasts, or, as it is commonly called, *morbus pilaris*, which takes place during lactation, is characterized by swell-

* The mere return of the menses during the period of lactation cannot, of itself, render it necessary either to wean the infant or procure another nurse; for, in many instances, this function appears regularly, without in any way affecting the ability of the mother to suckle her child. But should the menses occasion derangement either in this secretion or in the general system of the mother, the alternative must then be resorted to.—ED.

ing of one or other breast, and more rarely of both. The breast becomes painful, hard, tense, irregular, and presents a slight redness on its surface, with inequalities, which sometimes extend to the axilla. Although this engorgement may occur at different periods of lactation, and return again, yet it ordinarily manifests itself a few days after delivery, and most usually is not attended with danger. The causes of this engorgement are, cold, blows, pulling of the nipple, excessive sensibility from the too active suction of the child, excess in nourishment, sudden cessation of nursing, excoriations and fissures of the breasts, &c., &c.

Engorgement of the breasts usually terminates by resolution at the end of a few days, and it is not followed by induration except when it has been considerable, continued for a long time, or been badly treated. We should, in the first place, as soon as this accident occurs, disgorge the breast by artificial suction, or by the application of the child, if the mother nurse; if not, we should limit ourselves to diet or a light regimen, to emollient applications, which should be accompanied with the internal administration of saline purgatives, diuretics, and diaphoretics.

Inflammation.

Inflammation of the breasts is a more advanced degree of the malady, and may determine serious consequences; it invades the subcutaneous cellular tissue, the fasciæ, or even the tissue of the gland itself. Like the preceding, it may occur at any period of lactation, but most frequently manifests itself during the first month. It is occasioned by the same causes as the engorgement, and more especially by cold, fissures of the nipple, lively moral affections, &c., &c. If the subcutaneous inflammation be circumscribed, it differs in no respect from ordinary phlegmon. In feeling the breast, it will be discovered to be hard, tense, and painful in a certain point; the surface of the skin is smooth, red, and painful, and its thickness appears to be increased. If the affection do not terminate in resolution, the most sensible point soon softens, becomes of a livid red colour, and is the seat of an evident superficial fluctuation; finally, the skin becomes so attenuated that it bursts, and allows the pus to escape more or less externally.

If the inflammation should be more deep-seated, and invade the aponeuroses, the pain is more obscure, and becomes acute only when the subcutaneous cellular tissue or the gland itself is attacked, which is ordinarily the case. The engorgement then increases considerably; the breast becomes hard and irregular to the touch; the pain is very acute, profound, and pulsative, with lancinating sensations. The fever is the more violent as the inflammation occupies a greater extent of the gland, or its totality; and it must be remembered that the inflammation commences habitually at the superior and external portion of the breast; there is anorexia, thirst, cephalalgia, all the symptoms, in fine, of intense irritation. If the inflammation do not cease or limit itself, the secretion of milk becomes gradually suppressed, and we then observe, on the points which were first most indurated, the commencement of a deep fluctuation, which may involve several por-

tions, or even the entire organ; then collections of pus are formed in the milk-tubes, and in the areolæ of the gland. If the collection of pus be small, or if it be not near the surface, it will be very difficult to distinguish the fluctuation. It sometimes happens that, when the accoucheur does not possess great nicety of touch, he may suppose there is a deep-seated fluctuation, when, in fact, he feels healthy and soft portions of the gland, which, in most women, impart the sensation of effused fluid; this is an error which, occasionally, experienced practitioners have committed, and having made incisions into the part, instead of pus, only blood escaped. We should, however, open an abscess as soon as we believe it to be formed; for, if left to itself, the inflammation of the gland may give rise to a number of abscesses, which open at different points of the surface of the breast, often causing excessive pain; or they unite beneath the aponeuroses, and destroy a portion of the gland, involving the cellular tissue and the neighbouring glands of the axilla. In all cases, it is difficult to prevent supuration, no matter what means may be employed; and these means consist in emollient applications, in general and local bloodletting, &c., &c. Laxatives, diaphoretics, and warm baths should not be neglected. As to the methodical compression of the entire gland, advised by M. Trousseau, who says he has derived the best effects from it, I would not hazard to recommend it even at the commencement. When, notwithstanding these means, the inflammation continues and extends, and the pain becomes pulsative, anodyne cataplasms, unctions with the tranquillizing balsam or with the tincture of safron, will be useful. In fine, if the abscess become inevitable, as is usually the case, and fluctuation begin to be felt, no matter how deep-seated it may be, we should not hesitate to make an early and free incision; it is the best mode of putting an end to the inflammation, of destroying the tension of the parts, and diminishing the pain. This plan will likewise prevent the extension of the purulent collection, and thus protect a large portion of the gland. Inflammation of the breasts is a serious complication for the mother, for it prevents her nursing the child, either during the progress of the disease, if it have not involved too large a portion of the gland, or, if the gland be destroyed or indurated, which is not uncommon, the breast is entirely deprived of its function. In a word, the inflammation is easily reproduced in certain women, and requires the complete cessation of nursing. As has been seen, the disease may terminate in resolution, suppuration, or induration.

The resolution of the inflammatory engorgement is often accompanied with diarrhœa, abundant perspiration, and a remarkable increase in the quantity of urine.

After the abscesses have been opened, they should be continued so for some time by means of a dossil of lint, in order to favour the escape of the pus; and emollient cataplasms must still be applied with a view of completely disgorgeing the breast, and they may gradually be followed by astringents.

Induration of the gland may occur as well when suppuration has not formed as when it has taken place; it is a serious termination, and

every effort should be made to prevent it by employing absorbent and alkaline lotions, either with mercurial ointment, or with the ointment of the hydriodate of potash; and when the engorgements are considerable, the iodide should be taken internally.

§ 3. *Fissures or Excoriations of the Breast.*

In women who nurse for the first time, sometimes even in each successive lactation, the efforts of suction occasion fissures of the nipple more or less profound, which are always extremely painful, and which, although they are ordinarily not dangerous, frequently render all efforts at nursing unsuccessful.

Sometimes, however, when they are superficial, they heal spontaneously, the infant still continuing to nurse; but, for this to take place, the woman must be endowed with great energy, and with an anxious desire to nurse her child, for the suffering caused by the suction on the nipple, deprived of its epithelium, is almost intolerable.

This distress is often so great, when the excoriations are deep, that even in using all the remedies proper to tranquillize the pain, it requires almost superhuman courage to support it. Moreover, in these cases, the patient is often obliged to cease nursing in order to avoid serious accidents, such as loss of the nipple, inflammation of the breasts, abscesses, &c., &c.

It has been recommended, as preventive treatment, to prepare, before delivery, the nipple by gentle and often-repeated suction, with a view to harden the epithelium which covers the nipple. This plan will also have the advantage of rendering the nipple more fit to fulfil its functions, in consequence of the elongation it undergoes.

This is the only preventive means, as inefficacious as it may be, that we can propose.

The curative treatment is also extremely uncertain. I have seen all the remedies fail and succeed alternately; such as the mucilage of quince (five to six grains of quince to a spoonful of boiling water) applied to the breast immediately after nursing by means of a leaf of ivy; the butter of cocoa, cauterization with the nitrate of silver, &c. Finally, the only means presenting a positive advantage is mediate nursing, by means of the artificial breast (made of a cow's teat) of Madame Lebreton. This does not entirely preserve the nipple from the irritation occasioned by the suction, but it tempers it; and while the child continues to suck, without having its mouth immediately in contact with the breast, this latter gradually heals, and becomes restored.

As a means proper to facilitate this suction, and in order to cause the child to take the breast with more relish, the small cup of the nipple should be filled with warm sweetened milk.

The infant readily sucks the milk filling the little cup; a vacuum is soon effected, and the mother's milk soon replaces the other. I have often succeeded with this little artifice.

But if the infant should be feeble, it would be impossible to have recourse to this; we would then be obliged to obtain a nurse, whose child, being stronger, would suck the patient from the end of the artificial breast, while the nurse would provide nourishment for the infant;

for it is very important, under these circumstances, not to allow the breasts to become engorged, for this would be a complication which would certainly oblige the patient to renounce altogether the idea of nursing her child.

It often occurs too, that, in this artificial lactation, the efforts the child is obliged to make in suction causes inflammation of its mouth, and then this method must be discontinued, although the child may not refuse to take the breast.

These precautions are to be employed as long as the fissures are not entirely cicatrized; however, it would be well, from time to time, to try immediate lactation, in order to ascertain whether it may again be renewed.

Such is the conduct I pursue in these cases. I have almost always found the specifics so much lauded fail entirely.

ART. II.—LACERATIONS OF THE SOFT PARTS.

§ 1. *Elongation and Lacerations of the Neck.*

In some women the uterine orifice and neck itself, pushed down by the infant during labour, become so elongated that the presenting part of the fœtus draws them before it so as to form a species of sheath; most generally it is the anterior lip of the orifice which is elongated, and presents, behind the pubes and near the vulva, a resisting tumour, which must not be confounded with some portion of the fœtus.

The neck, thus stretched and violently compressed, sometimes occasions an acute pain, and is often lacerated in some point of its extent. This point, according to M. Stoltz, corresponds most commonly to the passage of the occiput when the fœtus presents the vertex, of the forehead or abdomen when the face presents, and of the occiput and forehead when the pelvis presents. These lacerations are often multiple, and may extend beyond the borders of the orifice, and involve the neck itself; and they may divide these parts into several irregular flaps, which, soon after delivery, retract, and become converted into small tubercles, which result in nothing serious, and do not require any treatment.

We must content ourselves, during labour, with preventing the elongation of the neck by pushing it, if possible, behind the presenting part; but this manipulation should be performed with great care, and without injuring the orifice with the hand.

§ 2. *Laceration of the Vagina.*

The walls of the vagina also are exposed, during delivery, to numerous lesions, more serious, and much less easily remedied than the preceding; they may be produced by the too violent and prolonged pressure of the head in the pelvic cavity, by the excessive distension it causes at the inferior portion of the recto-vaginal septum, by the energetic contraction of the longitudinal fibres of the uterus, which draw upward the walls of the vagina, and by the violent efforts of the woman to aid these contractions; and, finally, by the injudicious interference of the accoucheur. These lacerations will be the more commo

as the narrowness and deformities of the pelvis, the bony prominences and tumours of the excavation and size of the infant, are more considerable, or as the position it occupies distends more completely the vulva-uterine canal; the bridles and contractions of the vagina or vulva, and too great rigidity of the parts, are also causes of these lesions.

It is worthy of remark, that most commonly they have their seat in the upper portion of the vagina when they proceed from unskilful manipulations, and particularly from the application of instruments; while the lacerations of the inferior portion of this canal originate from the violent passage and dragging of the head of the fœtus.

Vesico-vaginal Perforations.

Fistulæ, which result from the communication of the bladder with the vagina, are easily recognised by the passage of the urine into the vagina, by the touch, by the use of the speculum, or by introducing into the bladder a sound, which will pass through the perforation. These fistulæ are not uncommon, and are difficult to treat. It is fortunate, however, that a large number of them heal spontaneously. It should be, nevertheless, observed, that it is much more difficult to effect the cicatrization of the vesico-vaginal fistulæ, or of the bas-fond of the bladder, than of those between the urethra and vagina. Be it as it may, it is true the surgical means employed have been undoubtedly successful; such as sutures, with needles differently shaped, cauterization with the actual or potential cautery, approximation of the borders of the wound by the method of Dessault, and the various modes of union suggested by different authors.

Recto-vaginal Perforations.

Besides the causes we have already enumerated as being capable of producing them, there is one on which M. Danyau has insisted, and which should be known to the profession. When the head is of large size and has descended on the floor of the perineum, and the external parts of generation offer resistance, if the accoucheur, with the view of supporting the perineum and preventing its rupture, exert with the hand too violent pressure on this part, the inferior portion of the recto-vaginal septum, excessively distended, ruptures without being perceived; it is, therefore, important merely to support the perineum, without forcibly pushing it back. The recto-vaginal fistulæ are, in general, extremely difficult to cure; occasionally, spontaneous cicatrization takes place, but we should not depend on such exceptions. The means used to remedy these fistulæ are, sutures, with paring the edges, as in the method of Diffenbach for laceration of the perineum, compression of the rectum, &c., &c.

§ 3. *Lacerations of the Perineum.*

We embrace under *lacerations of the perineum*, lesions which involve either the commissure of the vulva or the substance of the perineum itself, or, finally, those two parts together, and the sphincter of the anus. It is much more rational, with MM. Velpeau and Moreau, to term *lacerations*, or *slits* of the vulva, those which involve the labia

majora or fourchette only; and *lacerations* or *rupture* of the perineum those which affect a part of this region; involving also the fourchette, and sometimes the sphincter ani; finally, *central perforation of the perineum*—a rupture of this region exclusively, the commissure of the perineum and the sphincter remaining intact, a perforation through which the fœtus may be expelled.

Lacerations of the Vulva.

Lesions of this nature, which merely comprise the fourchette, and which extend only three or four lines on the perineum, or which even affect the labia majora and minora, and which are transverse or longitudinal, do not, in general, demand any special attention. Ablution with marshmallows and tents of lint interposed between the labia will alone suffice.

Lacerations or Rupture of the Perineum.

But those lacerations which involve a considerable portion of the perineal region are much more important, and call for particular treatment. The laceration takes place either on the median line and more frequently on the side, and embraces only the sphincter of the vulva, and more or less of the perineum, or, besides these parts, it involves the sphincter of the anus itself in totality or in part; an accident ordinarily without danger, but which always compromises the moral existence of the unhappy woman.

These accidents are caused by narrowness, rigidity, or œdema of the external parts of generation, which oppose too much resistance to the passage of the child; by the presentation of certain parts of the fœtus, which are either too large or in unfavourable positions, such, particularly, as the occipito-sacral or posterior, those of the face, breech, the presentation of the shoulders, badly-conducted manipulations; finally, by the too precipitate expulsion of the infant, and neglect in supporting the perineum. We should, especially, as M. Velpeau observes, be on our guard against the passage of the posterior shoulder in the positions of the head, when the expulsion is rapid. Lacerations of the perineum which are not extensive, those even which, though complete, still leave the anus and sphincter intact, are not serious; such, however, is not the case with those which include the sphincter of the anus and the inferior extremity of the rectum; they are followed by a loathsome infirmity, inability to retain the fœcal matter, thus converting the vagina into a veritable sink. Besides this may occasion prolapsus uteri, because the inferior floor of the vagina failing, the organ is not naturally sustained, and, moreover, it becomes impossible to maintain it in position by means of pessaries. These lacerations are also troublesome, because, offering no resistance to the fœtus at the moment of delivery, they permit a too rapid expulsion, which may be followed, as I have already stated, by inertia of the womb and hemorrhage, inversion of this organ, &c., &c.

Examples of the spontaneous cure of simple lacerations of the perineum are very rare, and, in this case, position alone will suffice. The patient should be placed on one of her sides, and the thighs kept

constantly approximated, or even they may be tied together, in order to avoid any movement which might tend to separate the two lips of the wound. But this is not always successful; the discharge of the lochiæ, the presence of which constantly irritates the wound, prevents its adhesion; unfortunately, it is impossible to obviate this inconvenience, and we are constrained to delay until the female has recovered from her confinement before undertaking a more certain operation. And then, in order to direct the cicatrization, and prevent any loss of substance, which might compromise some portions of the perineum, we should, when the reunion has not taken place spontaneously during the three or four first days, abandon all hope of this occurring, and place between the lips of the wound pledgets of lint saturated with a decoction of marshmallows. In all cases, also, we should introduce the catheter, to prevent the escape of urine into the womb.

As soon as the puerperal period has passed, we may resort to the suture, which, from its success, has numerous advocates, but which is not always infallible. The two kinds of suture most preferred are the interrupted and twisted, which should not, however, be used until the edges of the wound have been previously incised. When the lacerations are very extensive, they must be treated by the method of Diffenbach, which consists in putting in several points of suture in order to unite the borders of the wound, and afterward in making on the integuments two incisions nearly parallel in the direction of the two borders of the wound; these are intended to prevent the giving way of the points of the suture and the laceration of the parts embraced by them.

But the method of M. Roux is undoubtedly the most advantageous. This skilful surgeon, by this means, has succeeded in restoring the perineum in many remarkable instances. They are all recorded in a memoir read before the Academy of Sciences.

With a view to present more accurately the details of the mode of union adopted by this dexterous operator, I shall cite, in his own words, the description of one of the operations in which he completely succeeded by means of the twisted suture.

“The paring of the parts having been regularly performed, so that the two edges were similar to each other, I employed four ligatures, introducing the needles, on the one side, from without inward, and, on the other, from within outward; and I took care to encroach a little on the walls of the vagina, but sufficient only to make on these walls a slight traction, and place in contact the two wounds in all portions of their extent. The ligatures being placed, I then used for cylinders two pieces of gum-elastic bougie; one of the pieces was placed in the folds which the twisted ligatures formed on one side, and the other piece on the opposite side, between the separated portions of all these ligatures. I finish by forming, with the two ends of each ligature, on the second cylinder, at first a simple knot, but drawn very tight, and afterward a double knot. I bring the lips of the wound together somewhat firmly.

“I should mention that the twisted suture, from the manner in which it acts, projects slightly beyond the borders of the wound, and that, in consequence, the external coaptation is never so perfect as could be

desired. I have, therefore, thought of obviating this result, and place the skin in contact with itself. I attain this object by means of small ligatures, which I place in the different points of suture with the principal ligatures, and which serve as so many points of simple suture; but I am careful not to draw them too firmly. Thus, I had so completely anticipated every difficulty, and made every appropriate calculation, and the operation was so perfectly successful, that few things in surgery have afforded me so much satisfaction as the result of this method. The suture being completed, and the neighbouring parts not appearing tense, I dispensed with the lateral incisions recommended by Diffenbach.

“At the commencement of the seventh day, I withdrew the ligatures, the parts being sufficiently united, and in a short time the consolidation of the perineum was complete.

“The perineum, thus restored, differed in no respect from this part in its natural state; it was two inches in length, and a raphe divided it into two equal halves. In examining it, either through the vagina or anus, it felt thick and solid; and it was perfectly restored.

“This lady has since borne a child naturally, and the perineum was not injured.”

It is useless to add, that the patient should be subjected to a treatment proper to combat all the inflammatory symptoms; that she should have the catheter introduced, and the bowels kept open by gentle laxatives.

Destruction of the Perineum.

It sometimes happens that, in consequence of the severe and long-continued pressure of the head of the foetus on the perineum, this part becomes mortified in almost its whole extent, and when the slough falls off, there is a considerable loss of substance. This melancholy result may also depend on the want of cleanliness, when the perineum has been simply and regularly ruptured. A female, whose perineum had been lacerated by the forceps, came to La Clinique in the most deplorable condition, in order to be put under treatment; but the loss of substance was so great, and the rupture so extensive, that the anus and vagina made one common cavity, and it was impossible to distinguish the different parts composing the genital organs; M. P. Dubois could do nothing for this unfortunate woman. It would be possible, however, in certain cases in which this infirmity is less marked, to remedy it by autoplasty.

Perforation of the Perineum.

I remarked that I would reserve this name, with M. Moreau, for those rare cases in which, the vulva offering an obstacle to the passage of the child, this latter is expelled through a perforation of the perineum, the edges of the vulva and anus remaining most frequently intact. The passage of the child through a part so thick as the perineum is contested at the present day by M. Capuron, who absolutely denies that it can take place. Instances, however, of the occurrence of this accident are so numerous, and so well authenticated, that we

cannot doubt them. If we observe attentively the last expulsive contractions of the uterus in certain women, we shall notice that the head of the infant distends and enlarges considerably the perineum before passing between the lips of the vulva, and we may understand how, under the influence of certain causes, the head may be capable of perforating the perineum. These causes are, too great prominence of the sacro-vertebral angle, excessive inclination of the abdominal strait, a diminished curvature of the sacrum, insufficient solidity of the sacro-coccygeal articulation, increased capacity of the inferior strait, particularly at its posterior part, contraction of the pubic arcade, and excessive length of the symphysis pubis, rigidity of the vulva, length of the perineum, absolute rectitude of the entire pelvis, violence of the parturient effort, precipitate descent of the head, occipito-posterior positions, and, finally, anything that may contribute to prevent the parts, after having descended in the axis of the superior strait, to change their direction when they rest on the floor of the pelvis.

It may be remarked here, that when the fœtus passes through the perineum, the laceration ordinarily takes place obliquely on the sides of this region.

The treatment of this accident, which of itself is not very serious, consists in keeping the patient on her side, the thighs brought together by means of a bandage, in covering the wound with lint saturated with a decoction of marshmallows, and in the introduction of the catheter; and, finally, constipation must be guarded against. M. Moreau, who reports a number of spontaneous cures, thinks that it requires from thirty to forty days for the complete reunion of the parts. This treatment will suffice to perfect the cicatrization of the wound; if the anterior band or bridle of the perforation be very thin, or unites posteriorly, the wound will often be converted into a simple vulvo-perineal laceration, and the cure will be less easy.

§ 4. *Injury of the Coccyx.*

It occasionally occurs that, in women who are delivered for the first time at an advanced age, the coccyx, whose articulation with the sacrum becomes ankylosed, is fractured or dislocated. The consequences may be severe pain, inflammation followed by suppuration, caries, or necrosis. This accident is recognised by the displacement, and the unusual mobility of the bone, by the suffering occasioned during the efforts of defecation, or during the slightest pressure. It is to be treated by emollients, narcotics, leeches, incisions when abscess exists, &c., &c.

§ 5. *Displacements of the Uterus.*

Inversion.—I have already spoken of this accident.

Descent of the Uterus.

Descent of this organ, which I do not intend now to describe in detail, is not unfrequent after delivery, especially during the first days, in women whose tissues are relaxed, and with a large pelvis, and who have had a protracted labour and difficult delivery of the after-birth;

and in whom the perineum or recto-vaginal septum has been lacerated, and who, during labour or after confinement, have made excessive or premature efforts.

The touch will easily enable us to recognise this displacement of the uterus; the finger, in fine, encounters the neck a short distance from the vulva, or immediately between the lips of the vulva; and the woman experiences a weight on the fundament, and dragging sensations in the groins and lower portion of the abdomen. These symptoms, which are also accompanied with constipation, and pain in going to stool, are more or less intense, depending on whether the descent is incomplete, or whether there is procidentia of the organ. The means to be employed, in order to combat this condition, are the same in the two cases: thus, the female should be placed in the recumbent position, with the hips raised above the level of the chest; the accoucheur should endeavour to raise up the uterus with the fingers introduced into the vagina; all effort should be interdicted, absolute repose enjoined; the bowels should be kept open with injections, in order to avoid the effort of defecation, and the patient should keep her bed for four or five weeks. Ordinarily, these means will suffice; but if, notwithstanding their employment, the displacement be renewed, the uterus must be sustained by mechanical means, a sponge or pessary, with which may be united astringent injections, and a tonic regimen when the lochiæ have disappeared.

Ante-version and *retro-version*, *ante-flexion* and *retro-flexion*, may also occur after delivery; the uterus, heavy and badly supported by the ligaments, becomes reversed horizontally, either forward (*ante-version*) or backward (*retro-version*), or its walls, becoming more soft in consequence of the distension they have undergone and their defective contractility, permit the organ to become flexed, either anteriorly (*ante-flexion*) or posteriorly (*retro-flexion*), the fundus resting on the pubes or sacrum, while the neck changes but slightly its direction, or continues vertical.

We may include among the causes of these deviations, first, the laxity of the suspensory ligaments, the size of the uterus, the capacity of the superior strait, and all excessive effort; the adhesions contracted by the uterus with the adjoining parts, as the result of inflammation, and the abridged length of the round ligaments, seem also to predispose to ante-version.

The symptoms which indicate that these deviations have taken place are, dragging sensations, pains in the loins or groins, particular sensibility of the hypogastrium, sometimes symptoms of phlogosis of the peritoneum and uterus, fever, constipation, and retention of urine; then, in ante-version, the vaginal touch shows that the neck is situated very high in the excavation of the sacrum, while in retro-version it is placed behind the pubes; the body of the uterus lies almost horizontally, either in front or posteriorly. In retro-flexion and ante-flexion, besides the deviation of the neck anteriorly or posteriorly, the finger perceives the fundus of the womb in the posterior or anterior cul-de-sac of the vagina, but with more difficulty than in the preceding case.

In most instances, these deviations do not present any immediate

ganger; sometimes, however, they give rise to severe inflammatory action. The inconveniences which may result from displacement of the uterus are, retention of urine, constipation, and sterility. Retro-flexion of the uterus, especially, which is not very uncommon, exposes this organ to chronic inflammation and adhesions, which, in subsequent pregnancies, render miscarriage almost inevitable. The treatment, as in prolapsus, consists in placing the patient in the horizontal position, in restoring the organ as much as possible to its normal situation, either with the fingers which press on the neck or body, or with a small probe covered with lint, as proposed by M. Evrat. When the reduction is accomplished, we should place a tampon or piece of sponge between the vagina and neck, on the side opposite to the deviation, or a pessary of a proper form to maintain the organ in place. These means may be aided by injections, astringent and cold washes, &c., &c.; finally, for weak and chlorotic women, we may prescribe the cold ferruginous waters internally.

§ 6. *Effects of Delivery on the Intestines, Bladder, and Genital Organs.*

The sudden changes which the depletion of the uterus occasions in the relations of these viscera, those which take place in the circulation of the pelvic organs by the contraction of the uterine vessels, and, finally, the violent efforts, the prolonged pressure exerted during labour, determine, occasionally, accidents worthy of attention. Thus, the small intestines having been for a long time pushed up and compressed by the impregnated uterus, finding themselves suddenly relieved from this pressure, fall into a kind of inertia, in which the rectum, also a long time compressed, participates. Women, therefore, recently delivered, are most generally subject to *constipation*; others, on the contrary, are troubled with *diarrhœa*, which proceeds from an irritation of the large intestine; and this irritation, which sometimes extends along the whole digestive tube, is to be attributed to nearly the same causes. Finally, *hemorrhoids*, observed under the same circumstances, are produced by difficulty in the circulation, by the reiterated efforts to expel the fœtus, and by the violent pressure exerted on the inferior portion of the rectum. Emollient or slightly laxative injections should at first be employed, in order to remove the constipation; and if this do not prove effectual, we should administer castor oil, glauher salts, or ipecacuanha, but not until five or six days after delivery. The diarrhœa, the irritation of the intestines, and the hemorrhoids, should be treated, if they continue beyond the first week, by emollients, either internally or externally, and even by local blood-letting, depending on their degree of intensity.

It may, however, be remarked, that nature alone often overcomes these difficulties, as she does those of which we shall speak.

The bladder, by the pressure of the uterus, is almost incessantly solicited to void itself; but, during labour, it is more or less violently compressed by the fœtus, which sometimes induces a temporary inertia, or a veritable *paralysis*, which continues for a much longer time. The retention of urine resulting from this condition of things, merits all the attention of the practitioner, who should always be careful to as-

certain whether the patient has urinated. If, on the first day, she has not passed her water, he should introduce a catheter into the bladder for the purpose of emptying it, for its distension may occasion serious accidents. The antiphlogistic regimen will also favour the restoration of the contractility of the bladder. This inconvenience does not continue but a few hours, or, at most, a few days; the longest period I have known it to continue is fifteen days.

I would remind the reader how important it is to ascertain the actual condition of the bladder, in order not to mistake symptoms of retention for the commencement of a metro-peritonitis; an error which I have often seen committed.

Incontinence of urine is of short duration, and requires particularly the employment of laxatives, and blisters to the hypogastrium.

Delivery may also have an unfavourable influence on the genital organs. In addition to the various displacements and lacerations of which we have spoken, it occasionally happens that the vagina, neck of the uterus, fallopian tubes, ovaries, and even the cellular tissue which surrounds these organs, are affected for some time with a degree of irritation, and even become inflamed. Hence, there is at first a sensation of heat, tension, pain on pressure, an habitual febrile paroxysm, loss of appetite, cephalalgia, nausea, suppression, diminution, or change in the colour and odour of the lochiæ—symptoms not very apparent at first, but which require great vigilance, and may become very serious; for they are frequently followed by unnatural adhesions, indurations of the uterus or of its neck, metritis even, and those purulent collections which, in our hospitals, so often occur in the iliac fossæ and pelvis.

The antiphlogistic treatment in these different cases should be rigidly enforced. In fine, if, after emollient injections into the vagina, baths, cooling drinks and diet, the symptoms still continue, we should not hesitate to apply leeches in sufficient quantity, either to the vulva or groins, and even abstract blood from the arm when the pulse and general plethora of the system indicate it. Should abscesses form in the vagina, iliac fossæ, or in any other point, they should be opened as soon as the fluctuation becomes evident, in order that they may not extend and produce destructive ravages. But most commonly it is not possible to afford escape to the pus, and then it is absorbed, or finds a natural passage through the vagina or rectum.

Tympanitis.—One of the common effects of delivery is meteorism of the abdomen; this symptom is important, especially in reference to the diagnosis. It is caused either by cold, or by the relaxation of the fibres of the intestine and its inertia, or by deranged digestion, and sometimes by slight irritation. It is necessary, therefore, to look attentively at all the functions, with a view to ascertain that the tympanitis is not connected with some more serious trouble either of the intestines or peritoneum, and thus have recourse immediately to the proper treatment. We might, in a word, confound this state with peritonitis, metro-peritonitis, or gastro-enteritis, and employ local bloodletting and emollient applications, which would only tend to increase the meteorism; while it could be readily removed by gentle

laxatives, carminatives, embrocations with the oil of camphorated chamomile, together with compression on the abdomen by means of a moderately tight bandage.

Œdema of the Vulva.—We have already explained the causes of this œdema, and how it should be treated during pregnancy and labour; delivery does not always dissipate it, and it may increase to such an extent, and so completely close the labia majora, as to prevent the escape of the lochial discharge. This condition arises either from a simple serous infiltration without pain, or from an irritation, accompanied with great sensibility of the parts which have been contused during the passage of the infant. In the first case, slight scarification will suffice to diminish the tension; in the second, it will be necessary to apply leeches, and, if the inflammation be considerable, we should recommend the use of emollient cataplasms and warm baths.

Thrombus of the Vulva.—If, during pregnancy, thrombus of the vulva can occur, and be produced by the stagnation of fluids, and the varicose condition of the veins of the vagina, we can readily comprehend how this disease may result from the contusion experienced by the labia majora during the natural passage or artificial extraction of the fœtus. In a word, there forms in one or other labium, occasionally in both, a sanguineous effusion, which is sometimes quite limited, and at other times involves a portion of the breech, and occasions a large tumour, which is often accompanied with severe pain, especially if there be inflammation; it is known by the tumefaction and fluctuation perceived in it. The prognosis of these tumours, in general, is not alarming; for they sometimes are removed spontaneously, and their cure is not difficult, even if they should be converted into an abscess. But, in some rare cases, the blood, infiltrated around the rectum, bladder, &c., &c., has formed vast purulent collections, under which the patients have succumbed.

In the treatment of thrombus, I have only to recall what I said in speaking of the accidents of labour: 1st. The application of discutients; but they are without effect when the tumour fluctuates, is somewhat large, and distinctly circumscribed; it is only when it is very small and resisting that they can be had recourse to. 2d. The evacuation of the fluid contained in the tumour, by means of caustics, puncture, or incision. The two former being either injurious or ineffectual, we should employ incision. It should be made freely on the most prominent and softest point as soon as there is manifest fluctuation in the tumour, in order to prevent the effused fluid from extending too far, and involving other parts. If the thrombus be recent, it would be proper to delay twenty-four hours before opening it, that the lacerated vessels in the tumour may have time to contract, and thus prevent hemorrhage. It should be recollected that the opening of a thrombus, which has become converted into an abscess in the vicinity of the anus, will give rise to an escape of coagulated blood or a mixture of pus, having the odour of fœcal matter, and which may be attributed to a lesion of the intestine. After the incision, the wound gradually cleanses, and cicatrizes without difficulty, if care be taken

to employ simple dressings with lint and compresses, and likewise frequent ablutions of the part.

§ 7. *Bronchocoele.*

Tumefaction of the thyroid gland occurs more frequently after parturition than under other circumstances; it appears two or three days after delivery, and then it is attributed to cold, or even during the efforts of labour; and, in the midst of her cries, the woman experiences a sensation of rupture in the throat. This swelling may continue small, indolent, and stationary, or it may increase gradually in size so as materially to interfere with deglutition and respiration, and exert a dangerous pressure on the surrounding organs. The gland sometimes becomes inflamed, and is the seat of a large abscess, which bursts externally. The treatment is the same as for goitre, and consists, first, in emollient applications and leeches if there be inflammation; then, when this subsides, cold water and discutients should be employed. If the tumour be hard and indolent, we should administer iodine internally in potion, or externally in the form of ointment, and frictions on the part affected. The abscesses which may have a tendency to form are to be treated on general principles.

§ 8. *Rheumatism of the Uterus.*

If, during pregnancy and labour, the womb should be affected with what is termed *uterine rheumatism*, this organ does not enjoy its usual power of contraction; it remains developed above the pubes, and the female is exposed to hemorrhage.

The after-pains are then very severe and frequent, and the sensibility of the uterus, together with the general phenomena of reaction, may induce us to suppose that peritoneal inflammation exists.

Often, indeed, a slight metro-peritoneal inflammation accompanies this affection, and requires the application of leeches, cataplasms, laudanum, embrocations on the abdomen, and laudanum injections.

§ 9. *Puerperal Metro-peritonitis.*

I have not made a separate article for puerperal metritis, because this affection is so commonly accompanied with peritonitis that we can scarcely separate it from this latter.

Puerperal metro-peritonitis may assume two very marked forms:

1st. Truly inflammatory form: in this case, in which the peritonitis is the principal affection, or in consequence of the constitution of the patient, the metritis presents the true character of the phlegmasiæ of parenchymatous organs.

2d. Typhoid form: metro-peritonitis never presents itself under this form at the commencement; it corresponds with an anatomical lesion, which, perhaps, itself is but a consequence of uterine phlebitis, and which is characterized by putrescent softening of the organ.

I should mention here another form, much less alarming, but at the same time very insidious, of metro-peritonitis; I allude to that in which, after the remarkable diminution, and sometimes even the cessation of inflammatory symptoms, a most intense uterine neuralgia develops itself.

3d. The form to which has been applied the term *puerperal fever*. Here the inflammation of the peritoneum and uterus is only one of the pathological circumstances of the disease, and not the entire malady itself.

Inflammatory Metro-peritonitis.

A. *Causes*.—Inflammation of the peritoneum and uterus may be occasioned by the pains of childbirth, protracted labour, manipulations necessary for the extraction of the fœtus or placenta, cold, imprudence in eating during the puerperal period, lively moral impressions, &c. The suppression of the lochiæ must be regarded rather as an effect than a cause of the disease. So, also, with the suppression of the milky secretion.

B. *Diagnosis*.—I remarked, in speaking of the attention to the puerperal patient, that the accoucheur should make particular inquiry as to the functions of the bladder; he should not content himself with examining the urine and ascertaining the quantity, but he should place his hand on the hypogastrium, and assure himself that the bladder is not distended; for it may happen that, notwithstanding some urine may escape from the great quantity collected, yet the bladder may still be distended. If, in this case, we trust to the nurse, we may commit serious error.

The attention of the accoucheur should next be directed to the pulse; if he finds it natural, it is more than probable that the patient is in a satisfactory condition, although she may complain of sharp pains in the abdomen. When there is no frequency of the pulse, these pains experienced by the patient are usually nothing more than the after-pains occasioned by the return of the uterus to its primitive form. Moreover, the regular return, the type of these pains, which simulates those of labour, during which the uterus becomes hard, and which commence in the loins and terminate in the lower portion of the abdomen, will serve also to distinguish them from those which characterize the commencement of a metro-peritonitis. Finally, all doubt will be removed by an abdominal examination. Thus, we may press firmly on the iliac fossæ without occasioning any acute sensibility, if the pains be determined by the physiological contraction of the uterus; in the contrary case, the slightest pressure on the iliac fossæ causes acute suffering.

We should, however, be on our guard against a very common cause of error in diagnosis. If the patient have not urinated, or if she have done so only partially, the pain which results from this repletion of the bladder may induce us to believe that metro-peritonitis exists; in fine, this pain extends to the groins, it is increased by pressure, and has not the regularity of the after-pains; it is accompanied with frequency of pulse, extreme anxiety, cephalalgia, chills, enlargement of the abdomen, and may simulate the meteorism of metro-peritoneal inflammations. All error may be avoided by paying particular attention to the state of the bladder.

The invasion of metro-peritonitis, therefore, may be known by the following symptoms:

Full, hard, frequent pulse, heat of skin, sensibility on pressure, especially in the iliac fossæ; this sensibility frequently extends to the thighs; more or less meteorism of the abdomen. The commencement of the disease is often accompanied by a chill more or less prolonged, followed by headache. During the milk fever, the milky secretion is incompletely established, and there is no tumefaction of the breasts; frequently, too, from the very commencement, the lochial discharge becomes suppressed, which has induced some to regard this symptom, which ordinarily precedes all the others, as one of the causes of the disease.

C. *Progress*.—This affection rarely resists an energetic antiphlogistic treatment, especially when the strength of the patient permits a free use of it, and the return to health is sufficiently rapid; the physiological functions, which had ceased, resume their activity. Thus, the lochiæ reappear, the breasts swell, the fever subsides; in a word, all the other symptoms disappear. But, if the disease should have been mistaken at its commencement, if the treatment have been inefficient, either because it was had recourse to at too late a period, or because the malady was beyond the resources of art, it may be modified in its progress, but the result will be fatal. Sometimes to the inflammatory period will succeed a period of collapse or adynamia, which will coincide with the formation of a sero-purulent effusion in the peritoneum, and occasion death in a few days; sometimes the disease advances with frightful rapidity; although the effusion takes place, the period of collapse fails, and the patient will sink in a few hours in the midst of furious delirium, excruciating suffering, enormous distension of the abdomen, and, finally, constant suffocation, accompanied with vomiting, hiccough, &c. At other times the pains completely cease, the distended abdomen is insensible, or, at all events, pressure occasions only an obtuse and deep-seated uneasiness.

But, in all cases, the agony is often prolonged without symptoms of ataxia; consciousness remains perfect, the pulse gradually fails, general coldness, commencing at the extremities, pervades the patient, and she expires. This termination is happily rare in the inflammatory form, when it is properly treated. Such, however, is not the case in the typhoid form, and in puerperal fever.

D. *Treatment*.—At the commencement of the malady we should insist on bloodletting, proportioned to the intensity of the disease, to the strength and temperament of the patient. When the pulse is full, if there be well-marked symptoms of inflammatory fever, twenty to twenty-five ounces of blood should be abstracted from the arm, thirty to forty leeches applied to the iliac fossæ, succeeded by a warm cataplasm of flaxseed, while another is placed over the vulva; these cataplasms must be changed every three or four hours, and during this change the abdomen should never be left naked or exposed, for the fresh cataplasm should be applied the instant the other is removed. In this way, the action of the air on the abdomen is prevented, and the abdomen itself is kept warm and moist.

The cataplasms should also be sprinkled with laudanum, especially if to the inflammatory symptoms sharp and frequent pains be added.

Finally, the patient should take a cathartic of castor oil, or of calomel, in order that a purgative effect may be produced; for it is extremely important in this case, as also in the whole course of the disease, to avoid constipation. The most absolute repose should be enjoined, and separation from all excitement; every half hour a drink should be administered of some warm and sweetened infusion. It is rare for an affection really inflammatory to resist this treatment. Most generally, these means will suffice to break the violence of the symptoms; and repose, the use of warm drinks, emollient cataplasms and injections, continued with care, will effect a speedy recovery. If, after one general bleeding and the application of leeches, the symptoms do not yield, we should again have recourse to leeches applied to the iliac fossæ, and their number must be proportioned to the intensity of the disease and the strength of the patient.

But, should the inflammatory period pass without an amendment, we must abandon bloodletting, and prescribe baths, laudanum injections, two a day, with the addition of eight to ten drops in each, and embrocations to the abdomen composed of laudanum and camphorated oil of chamomile; finally, mercurial frictions on the abdomen and thighs. I have often seen this succeed in desperate cases, and in women who had been enfeebled by hemorrhages or distressing pregnancies.

When the patients recover from this disease, they frequently experience, during their convalescence, symptoms of gastric derangement; their strength and appetite do not return, and there is a slight febrile action. In this case, vomiting by ipecacuanha will be found useful.

Neuralgic Form succeeding the Inflammatory Condition.

It is principally in those cases in which the metritis is the predominant affection that we observe uterine neuralgia succeed metro-peritonitis; it will be recognised by the following symptoms: there is but very little sensibility either in the hypogastrium or in any other point of the abdomen; the fever has ceased; nor is there nausea, vomiting, or constipation. In a word, everything announces a favourable termination, when the pains return after an interval of twelve or twenty-four hours of perfect calm; they soon become extremely distressing; the patient compares them to the pains of childbirth, so far as their origin is concerned, but not as regards their severity, which, she says, is much more intense. We might suppose that the metro-peritonitis was returning, if the insensibility of the abdomen, the state of the pulse, and the other negative signs which I have just mentioned, did not suffice to establish the diagnosis. If, however, some doubts should still remain, there is one symptom which will render the diagnosis certain, and which, consequently, may be considered pathognomonic. In metro-peritonitis, the patient carefully avoids all motion, because it always increases her sufferings; in uterine neuralgia, succeeding metro-peritonitis, there is, on the contrary, continual jactitation, impossibility of maintaining any given attitude, and hence there is change of position every instant.

In this species, the treatment is simple and certain: laudanum in-

jections, repeated every two or three hours until the complete cessation of the pains, will dissipate them in twenty-four hours; and the termination of the metro-peritonitis is as rapid as if this complication had not occurred during its progress.

I observed, the last year, a case of this kind in the service of M. Honoré: a patient affected with puerperal metro-peritonitis had been in one of the wards for six days; her condition had gradually improved, and on the seventh day she was considered cured; but on the following day M. Honoré was informed that this patient had been seized with violent pain about 12 o'clock the previous night, and that she would certainly die in consequence of the continued aggravation of the pains. The diagnosis was not for a moment doubtful; and the prognosis itself was quite favourable; and, finally, on the administration of the third anodyne injection, the pains completely ceased, and the convalescence was rapid.

Typhoid Form.

Typhoid metro-peritonitis usually commences with a very intense and prolonged chill, to which succeeds headache and somnolence; the pulse is small, hard, concentrated; the skin is warm and dry, and covered with reddish spots, particularly on the fingers, wrists, and knees; the thirst is excessive; there is abdominal meteorism, and sensibility, on pressure, in the iliac fossæ. Frequently to these first symptoms are united a serous diarrhœa, frequent vomiting, and dyspnea, with more or less suffocation; the features are altered; the eyes become sunken; the face is pale, or flushed only on the cheeks; finally, there is complete prostration of strength, with subsultus tendinum. This condition continues for a shorter or longer time; but, in general, if the patient do not amend after thirty-six or forty-eight hours, the face becomes clayish, the features decompose more and more, a cold perspiration covers the whole body, the abdomen enlarges, and presents distinct fluctuation; sometimes the sensibility of the abdomen is extreme; sometimes it is obtuse, and the patient complains only of pain in the loins; the dyspnea increases considerably; the urine and fæces escape involuntarily; and, finally, the patient succumbs, after prolonged suffering.

A. *Prognosis*.—This form is more frequently fatal than the preceding. Although generally less rapid in its progress, the symptoms become more rapidly aggravated than in the inflammatory form. Thus, the first inflammatory period is so short that it is often inappreciable, and the sero-purulent effusion follows immediately the attack. This circumstance explains why the antiphlogistic treatment is so rarely successful.

B. *Treatment*.—During the first few hours of the attack, especially if the inflammatory period is very decided, the treatment differs but little from that recommended in the inflammatory form; if, however, certain symptoms should indicate in advance the typhoid form, we must be reserved in the use of bloodletting; and, in this case, content ourselves with one or two applications of leeches to the iliac fossæ. We shall find the mild laxatives of advantage, such as castor oil, espe-

cially if there be constipation; diarrhœa, even, would not contra-indicate this medicine; then we should administer small injections, with ten or fifteen drops of laudanum, to which may be added with advantage some camphor (a drachm triturated with the yolk of an egg); mercurial frictions on the abdomen, and this latter should be constantly covered with a large but light cataplasm. The drink, from the commencement, should be gum-water and mild infusions; but when the typhoid symptoms fully manifest themselves, wine and water, quinine, &c., will be indicated.

In some cases, blisters to the thighs and legs have been recommended.

Epidemic Metro-peritonitis, or Puerperal Fever.

An affection, which partakes at the same time of these two inflammatory and typhoid forms, but which assumes more commonly the second, is the epidemic puerperal fever, a frightful and rapid malady.

This fatal disease is still but little known, either as regards its nature, forms, or treatment; for, whenever it has prevailed in hospitals devoted to parturient women, it has presented a peculiar character, and often very dissimilar symptoms, the reasons of which will be found in the singular atmospheric vicissitudes, so ably alluded to by writers. This mysterious influence, which imparts to all diseases a variable character, and often proves rebellious to all therapeutic agents, is especially manifest in puerperal fever; thus, in the actual state of science, we cannot give a complete history of this affection. It is only by a series of observations collected under different circumstances of time and place, and by comparing the progress, duration, termination, and treatment of the principal phenomena of numerous epidemics, that we shall be enabled to throw some light on the nature of this disease, and the therapeutic methods most appropriate to oppose it.

I shall limit myself, therefore, to a brief history of the principal epidemics, the description of which has been transmitted to us, and of those which I myself witnessed in 1836-38.

At the Hôtel Dieu in Paris, in 1782, a most frightful epidemic appeared. Doulcet, struck with the peculiar character of the disease, a character attributed to the constipated condition of the bowels, administered ipecacuanha to all the patients, and from this moment the malady ceased its ravages.

In the epidemic which was so destructive, in 1790-91, in Aberdeen, the peculiar type of the disease was an inflammatory condition, manifested by intense headache, full pulse, &c. General and local bleeding, carried even to syncope, enabled Gordon to save nearly all his patients.

M. Tonnellé, under the guidance of Desormeaux, has given an account of the puerperal fever which prevailed in the Maternité of Paris in the year 1829. In nearly all the cases which he has collected, we find the various forms of this frightful malady:

1st. Inflammatory form. 2d. That typhoid form, often following the suppuration of the vessels or the purulent absorption, and frequently accompanying uterine phlebitis and uterine putrescence, so well de-

scribed by Dance. 3d. The ataxic form, which he has observed more rarely.

It will readily be perceived that these varieties not having escaped the sagacious observation of Desormeaux, this learned practitioner did not adopt any exclusive method of treatment. "He had," observes M. Tonnellé, "conceived just notions of the treatment of this disease; he did not place any constant and positive value on the different therapeutic methods; their utility, in his opinion, was only relative, controlled, on the one side, by the various forms of the disease, and, on the other, by the different atmospheric conditions, which sensibly influence it, without, however, modifying its general character. Thus, according to Desormeaux, it is false to affirm, in an absolute and indeterminate manner, that any particular medication will cure this disease. In the actual condition of science, we should limit ourselves to saying what remedies have succeeded at a given period and under given circumstances, and what have failed, until numerous and satisfactory observations, collected at different epochs and in different circumstances, lay a solid basis for a general system, which, at the present day, we do not possess. This skilful physician employed, according to indications, general and local bloodletting, mercurials, emetics, laxatives, opiates, baths, cataplasms, blisters, sinapisms, quinine."

A. *General Bloodletting*.—In the inflammatory form, Desormeaux derived undoubted advantages from general bleeding; employed at the commencement, and repeated several times during the twenty-four hours, it sometimes arrested the disease. In the second period, bleeding was rarely useful; however, it sometimes proved beneficial, when, after the formation of the effusion, general reaction occurred, with a hard, frequent pulse, increased heat, flushed countenance, &c. This bleeding, under these circumstances, prevented secondary inflammations, particularly pleurisy and pneumonia.

Desormeaux and M. Tonnellé frequently noticed the inflammatory type disguise itself under the delusive appearance of debility and prostration: pale face, small pulse, and mediocre heat of surface. In this insidious form, the exploration of the heart and lungs occasionally furnished most valuable signs. If the pulsations were tumultuous, the sound dull, and the impulsion strong, if the respiratory murmur were feeble, Desormeaux had recourse to an experimental bleeding, and repeated or abandoned it, according to the effect produced, the state of the pulse, and the character of the blood drawn from the vein.

B. *Local bleeding* was of great service in active inflammation of the peritoneum and uterus, with high general reaction.

The leeches were applied to the abdomen, forty or fifty in number, and frequently they were repeated in the evening and following morning, if there were not evident amelioration. It was found necessary with some patients to apply as many as two hundred in the space of thirty-six to forty-eight hours.

These local bleedings had a constant influence on the pain, and were well borne by the patients, even by those who were enfeebled; they occasioned a sort of respite, during which the heat and agitation subsided; the skin became covered with perspiration, and frequently the

lochiæ reappeared. Such, however, was not the case with the general bleeding, which was always followed by rapid debility, often without affecting the local disease.

C. *Mercurial Frictions*.—When the effusion or suppuration had formed, and, particularly, when there were symptoms that the pus had been absorbed, Desormeaux abandoned bloodletting, and had recourse to mercurial frictions, which frequently proved successful.

D. *Ipecacuanha*.—Since the time of Doulcet, physician of the Hôtel Dieu, who gave popularity to this remedy and derived such brilliant success from it, ipecacuanha has been alternately prescribed as an infallible agent, and abandoned as useless or injurious, because attention was not paid to the particular forms which the state of the atmosphere imparted to the disease, and which would justify or contra-indicate the use of this remedy.

Hufeland, Oslander, M. Recamier, and M. Clét (of Lyons), derived great advantage from the administration of ipecacuanha. Desormeaux employed it for the first time in 1828; at first, his success was undoubted, but in the course of the following year he succeeded sometimes, and failed frequently. It was not until the commencement of December, 1829, that the medical constitution, so to speak, favoured its employment.

“For nearly two months that this remedy was administered,” says M. Tonnellé, “all the patients did not recover, but a large number were saved as if by enchantment; but, at the end of October, emetics lost their influence. Desormeaux then suspended their use until favourable conditions should again present themselves.”

Epidemic of January, 1836, observed at the Midwifery Clinique at Paris.

The epidemic puerperal fever which prevailed at La Clinique in 1836 presented the inflammatory type; and yet the antiphlogistic treatment, which seemed the most rational, was attended with such little success, that this circumstance furnishes an additional evidence that there is in this disease an intangible principle, which escapes analysis, and which, modified by circumstances, constitutes the veritable malady.

How, in a word, can we otherwise comprehend the development of a disease which assumes such different characters, laying waste a whole section of country or an hospital, and prevailing at the same time with the same intensity, and disappearing without any appreciable change in the conditions in which the patients are placed?

Thus, if it were not true that essential fevers do not really exist, and that all those fevers to which this name has been given are but a symptom or evidence of a lesion of some organs inappreciable to our senses, I should not hesitate to give epidemic puerperal fever the name of essential fever.

Etiology.—Authors have considered as causes of puerperal fever affections of different kinds which may present themselves in the female during pregnancy: imprudence in eating, abuse of spirituous liquors, exhaustion produced by exposure and poverty, laborious deliveries, or

those which have required long and painful manipulations. We cannot but see in these different circumstances certain serious predispositions; but the observations made in 1836 do not warrant us in attaching much influence to them in the production of the disease, for the epidemic attacked as frequently those women who had been previously in health as those who had been sick; those who had been delivered spontaneously, as well as those who had been the subject of long and painful operations.

Some authors have regarded *suppression of the lochiæ* as a cause of puerperal fever. This view is not confirmed by experience; the lochial discharge always becomes suppressed after the cessation of the disease, and we therefore see in this an effect, and not a cause. It is the same as regards the *secretion of milk*. Indeed, almost all the patients were attacked before the establishment of this secretion. If we cannot exactly admit, with some authors of the last century, that the peritoneal effusion is occasioned by a metastasis of milk, yet there may be something of truth in this opinion. Without saying that there is really milk in the effusions of the peritoneum, it is very certain that the absence or suppression of this secretion, if it do not determine the disease, at least aggravates it.

Constipation cannot be considered a predisposition, but it is an aggravating circumstance in the malady; and hence good effects have always been obtained from the use of laxatives, especially in consequence of the increase they occasion in the intestinal secretion.

Diarrhæa, appearing after the invasion of the disease, can only be regarded as an effect of the malady; and if, in some rare cases, it manifests itself before any other symptom, it is because of a departure from the ordinary rule.

Fetor of the Lochiæ.—In this epidemic, the lochiæ assumed a remarkably fetid character; and M. P. Dubois also regards this circumstance as an effect, and not a cause.

Moral affections, imprudence in regimen, &c., which have a direct influence in the production of sporadic metro-peritonitis, constitute, in epidemic peritonitis, only aggravating circumstances.

Low temperature, and cold, damp weather, have also been enumerated among the causes of this affection; but we see the disease appear with as much intensity in the warm and dry months of the year as at any other time. Besides, according to the statistics collected on this subject, we must admit that the mortality is less in northern than in southern climates. If, however, cold cannot be regarded as an essential cause of the epidemic, it is, nevertheless, a determining and aggravating circumstance of the malady.

Changes in the Air of Hospitals and Wards.—These changes cannot be analyzed, and it is impossible to appreciate any difference in the air of hospitals and that of the city; and yet epidemic puerperal fever is much more frequent and fatal in hospitals than in the city, but the causes contributing to the development and gravity of the disease cannot, in any manner, be regarded as original causes; for occasionally the epidemic prevails in the city before a single case shows itself at the hospital

It is, however, well understood, from the observations made in the different lying-in establishments, that the only mode of modifying the disastrous effects of puerperal fever is to erect small, isolated hospitals, the wards of which, being well ventilated, should contain but a few beds. The Midwifery Clinique at Paris fulfils nearly all these conditions. Thus, M. P. Dubois has caused small wards to be arranged, properly warmed and ventilated, and containing each only four beds. But all this solicitude by which M. P. Dubois has endeavoured to remove the slightest causes of mortality, is neutralized by the inattention of the administration as regards the circumstances connected with the costly erection of this model hospital. The hospital buildings are surrounded by very high houses, some of which were constructed before the hospital, but the greater number are built on a terrace purchased by the faculty for this purpose, instead of having constructed a low wall and spacious gardens, which would have permitted a free circulation of air.

But this not all ; this hospital, erected at the expense of the state, through the efforts of M. Orfila, forms a partition wall with the dissecting theatres, the influence of which, although less manifest during the winter, is still obnoxious ; but in summer an odour so infectious is exhaled, that at times it becomes necessary to close the windows looking on that side.

Thus, it is very certain that, if the nourishment were better at La Maternité, if the wards were more comfortably warmed, and the number of patients less, the mortality would also be much less considerable than at La Clinique, in consequence of the great difference in the hygienic situation of the buildings. Again, if the two hospitals enjoyed the same topographical advantages, it is evident that the results would be much more favourable at La Clinique, in consequence of the greater excellence of its internal arrangements and regimen, and of its more limited number of patients.

In 1829, when this epidemic was so fatal at La Maternité, M. P. Dubois caused to be prepared without the building a small establishment, to which all the newly-delivered patients were transported : two only out of sixty died, although the epidemic continued to prevail in the rest of the hospital.

Did these results depend on the new and favourable conditions in which the patients found themselves placed, and on the fact that they were removed from the contagion of which the hospital was the centre ? There can be no doubt of this ; but are we to admit that these happy effects were obtained because the patients were out of the reach of the contagion, determined by the contact of the women themselves, and by the vicinity of those who had succumbed ?

The experience which I record would tend to invalidate the opinion of the contagionists. In fact, the same nurses, the same sages-femmes, and the same physicians attended both the large and small establishment.

Some authors, however, are of opinion that the disease may be transmitted by the clothes, bedding, nurses, and even by the physicians themselves. If, indeed, the action of contagion be not proved, it is at

least doubtful; and I think that, in this doubt, it will be extremely wise to endeavour to prevent it. Such is the conduct pursued at La Clinique Hospital, according to the orders of M. P. Dubois. When a female is very ill, she is separated, as far as practicable, from the others; should she die, the bed-clothing is purified, the curtains are changed, and the apartment is ventilated for several days, and carefully cleansed before other patients are allowed to enter it.

Those who have studied the character of epidemic puerperal fever will feel that these precautions are not useless. How often have I seen, before these minute details were observed, the same bed prove fatal to several women consecutively, while other women, sleeping in the same ward, escaped with impunity! Should this be considered merely in the light of a coincidence? What, indeed, should be thought of the following facts reported by M. P. Dubois, and recorded in an excellent memoir by M. Voillemier?

A young sage-femme of La Maternité, who was not pregnant, died during the prevalence of a disastrous epidemic, presenting all the symptoms and all the anatomical characters of puerperal fever; and the pupil who fulfilled the duties of interne at the same period, was called to the city to attend a patient in labour just as he had completed the autopsy of a female who had died at La Maternité; this patient, immediately after her delivery, was attacked with puerperal fever, and sunk very rapidly.

M. Moreau himself is somewhat in doubt whether the disease which occurs in the city at the same time that it does in the hospital, cannot be traced to contagion transmitted by the physicians as well as to epidemic influence. Such, certainly, is my own experience. It was rare, when an epidemic prevailed at La Clinique, that I had not also patients in the city. Since I have ceased my duties there, I have had but one case of sporadic metro-peritonitis, the determining cause of which, unconnected with epidemic influence, was readily appreciated.

It is also very certain that accoucheurs not attached to the hospitals have, during a series of years, attended a great number of women in labour, and have not met with a single case of puerperal fever.

The facts will not permit us to assert positively that the disease is contagious, and yet they will not justify the unqualified rejection of contagion.

Progress of the Disease.

The disease commenced most commonly between the twenty-fourth, forty-eighth, or seventy-third hour.

It was generally preceded by a chill; the pain commenced in the iliac fossæ or in the hypogastrium, and then extended rapidly over the whole abdomen; the pain was very much increased by cough, pressure, vomiting, and even by respiration; sometimes the pain ceased a day before death, rather because the faculty of perceiving it was lost, than because the disease had disappeared; this fact was the prelude to dissolution. All the patients were not troubled with pain in the loins, but those who were died more rapidly.

The pulse was very frequent, compressible, and became almost

completely extinct under the finger ; it was seldom above 120, and reached as high as 150 ; in one patient it was 160.

The face was profoundly altered.

The lochial secretion was suppressed in some women, continued in others, and sometimes only became diminished.

Frequently, the invasion of the milk fever coincided with that of the puerperal fever, sometimes it continued or became suppressed ; most usually, however, it was wanting from the commencement.

The tongue in the beginning was white, moist, and red on the borders.

Diarrhœa was a constant attendant ; it was one of the first symptoms observed, and, at the commencement, was always grave, while it was favourable at the decline of the disease.

The urine in some patients was small in quantity ; in others, it was very highly coloured.

The patients were not, in general, affected with delirium ; the intellectual faculties were preserved until the last moment. One patient only had furious delirium ; in the two others it was slight and temporary.

Before the second day, the distension of the abdomen was due to meteorism ; from this period, the effusion began to form ; frequently, it had already taken place in the first twenty-four hours.

The dyspnea was extreme ; neither the frequency of the pulse, nor the pain on inspiration, nor the effusion of fluid, could explain this excessive difficulty in breathing ; M. P. Dubois attributed it to a peculiar nervous condition. Indeed, we see every day considerable effusion without this marked suffocation.

Almost all the patients were affected with vomiting, at first yellow, then greenish, and sometimes black.

Nearly all succumbed after a complete chill ; fifteen out of sixteen patients died.

Treatment.

The inflammatory character which the disease appeared to assume caused hope that the energetic antiphlogistic treatment would be attended with beneficial results. Thus, M. P. Dubois prescribed bleeding from the arm at the commencement, sixteen ounces from a large opening ; immediately afterward thirty to forty leeches were applied to the iliac fossæ and hypogastrium ; warm vaginal injections were ordered ; cataplasms frequently renewed ; and the patient had administered to her castor oil, and in the evening the sirup of diacodium in a potion.

All these means were employed during the first period, that is, during the first twenty-four hours. These results were obtained :

1st. When the remedies succeeded, the pulse became slow, and the pain disappeared.

In the first case, the expectant mode was adopted.

2d. The disease not being broken, M. P. Dubois, if the pulse permitted, had recourse again to leeches, rarely to general bleeding, which was, then, small in quantity ; but he particularly endeavoured to prevent the abdominal effusion, by increasing the in-

testinal secretion, and with this object he administered calomel in repeated doses until slight salivation was produced.

3d. During this period the meteorism was considerable; there was manifest fluctuation, small, frequent, depressible pulse, and the face profoundly altered; the patient was affected with frequent vomiting.

Camphor was then administered in injection, combined with the sulphate of quinine (a drachm of each). Rubefacients were applied to the legs, and blisters to the thighs; and, internally, the decoction of quinine, wine and water, seltzer water, &c.

Post-mortem examination did not shed much light on this obscure question; we could not detect in the same organ always the same lesion; the lesions of the peritoneum, however, were the most constant. Thus, this cavity was always distended by a considerable quantity of turbid, yellowish-white fluid, in which floated floculi of a concrete matter of the same colour. Pus was not once detected in the vessels, although it was frequently found effused in large quantity in the peritoneum, in the broad ligaments, and in small masses in the tissue even of the uterus. This absence of pus in the lymphatics and veins does not conflict with the observations of Dance and Tonnellé on uterine phlebitis, but it goes to show how variable are the alterations found in the various epidemics of puerperal fever; for M. Tonnellé, on the contrary, detected these alterations almost constantly in the epidemic of which he has given us an account. In 1829, in the two epidemics which appeared during my sojourn at La Clinique, I noticed, with M. Landouzy, a case evidently similar to those mentioned by Dance and M. Tonnellé: pus was observed in the thoracic duct, and in the uterine veins. Occasionally, also, we have met with that softening of the womb called putrescence; but, most generally, the uterus was firm, its walls in a healthy state, and blood flowed from the vessels as they were cut.

Finally, in a female who had exhibited, during the disease, all the symptoms of the most intense and rapid puerperal fever, I found in the autopsy, made with M. Landouzy, no lesion which could explain the cause of death. All the organs were examined, the muscles incised, the articulations opened, and we found neither effusion nor metastatic abscesses; finally, there were none of the changes ordinarily revealed by the autopsy in similar cases. This woman, whose name was Boncelot, was delivered 27th June, 1839. During the different phases of these epidemics of 1839, the digestive apparatus seemed to be labouring under considerable derangement; and M. P. Dubois found the use of ipecacuanha very advantageous; but the mercurial frictions, employed in the third period, completely failed.

The epidemic which occurred at La Clinique in 1838, and which was so accurately observed and described by M. Voillemier, then interne of the establishment, presented likewise nearly the same alterations. An analysis, unfortunately too brief, of the remarkable memoir published by M. Voillemier, will complete the

feeble outline I have given of this disease, so full of interest, and the nature and treatment of which are, unhappily, so obscure.

The epidemic observed by M. Voillemier in 1838 assumed two well-marked forms, the inflammatory and the typhoid.

In the first, intense chill, of variable duration, but less prolonged than in the second; shortly afterward, acute pain, but limited to the hypogastric region; sometimes it declared itself in one iliac fossa, sometimes in the other.

General reaction, pulse small during the chill, from 110, 120, 130 per minute; the skin, at first pale, became red and burning; then frontal headache, often very intense, accompanied with marked acceleration in the breathing. This first period terminated in an extreme prostration of strength; there was yet no diarrhœa, meteorism, or vomiting. One general bleeding, thirty leeches to the abdomen, and a purgative potion generally sufficed, in mild cases, to remove all difficulty. This inflammatory nature of the disease did not always show itself in so absolute a manner. Thus, in some women who, after a chill of half an hour, appeared extremely prostrated, with pale countenance, rapid and concentrated pulse, under the influence of the first bleeding the pulse rose, the skin became moist with free perspiration, and severe headache ensued; so that it became necessary again to resort to sanguineous emissions, which, the first time, had been employed with some apprehension. This type yielded ordinarily with rapidity to the antiphlogistic treatment; it was sometimes fatal, but it was far from presenting the same gravity as the following form.

Typhoid Form.—This form, rapid in its development and invasion, frightful by the number and severity of its symptoms, which, resisting every therapeutic agent, and advancing most frequently towards a fatal termination, commenced with a chill, sooner or later after delivery; this chill generally continued a long time, notwithstanding all the means employed to keep the patient warm. The pain commenced simultaneously with the chill, and extended over the whole abdomen and loins; it was so acute that the patients could not endure the weight of the cataplasms and bed-clothing. Meteorism of the abdomen likewise manifested itself; the pulse was sometimes 140 in the minute, often it was impossible to count it; the respiration was hurried, with extreme anxiety; the eyes without expression; the face, pale and profoundly altered, was covered with an abundant viscid perspiration; then copious fetid diarrhœa ensued, which rapidly exhausted the constitution; vomiting of green matter, which nothing could arrest; and, finally, the patient succumbed after a few days, sometimes a few hours, preserving her intelligence.

In twenty-four autopsies, the presence of pus in the lymphatic vessels, and inflammation of the veins, were observed only in two instances. In all the other cases, pus was infiltrated in the subperitoneal cellular tissue, and likewise in that of the pelvis.

The uterus was most frequently exempt from all lesion, only its size was more considerable than usual, and its internal surface

was covered with a reddish sanious coat, often extremely offensive; but its tissue was rarely softened. Sometimes it contained pus, collected in small masses the size of a pea, and which appeared enclosed in a species of small cyst, to which there was no opening.

Inflammation of the veins was detected only three times, and did not extend farther than the hypogastrium. In six cases, the peritoneum was entirely exempt from any alteration. The quantity of fluid contained in the peritoneum was sometimes not more than would fill a wine-glass; at other times it equalled three pints. On one occasion, M. Voillemier found the fluid coloured by blood; in most instances, the effusion was of a purulent nature. Finally, perforation of the stomach was noticed only once, a circumstance which had already been observed by Chaussier, M. Tonnellé, and M. P. Dubois.

Once pus was detected in the humero-cubital and radio-carpal articulations, six times in the pleura, but on no occasion in the lungs.

The treatment during this epidemic did not differ from that resorted to in the preceding; the baths, however, did not seem to be of much efficacy; often they appeared to aggravate the symptoms. Such was not the case with injections, which were constantly followed by the happiest effect.

As to the mercurial preparations, M. P. Dubois did not employ them except during the second period; and, notwithstanding the small number of women with whom mercury was used, there were, undoubtedly, ten who owed their lives to this remedy. It was employed in friction on the abdomen and thighs.

§ 10. *Phlegmasia Alba Dolens* (Edema of newly-delivered Women).

This name has been given to the acute and painful tumefaction of the inferior extremities, which sometimes takes place as one of the consequences of delivery. The début of the disease occurs from the fifth to the fifteenth day after parturition. Sometimes the symptoms of the malady are preceded by general distress, and, again, the local symptoms appear the first. Thus, the patients are attacked with fever, without being able to explain the cause; then, after a few days, swelling of the inferior extremities appears. At other times, the swelling is preceded by violent chills, which occur at several different periods. Occasionally, to these symptoms is united a spasmodic metro-peritonitis, more or less grave; but, most generally, the *phlegmasia* occurs alone, and without any other apparent precursory symptoms. The disease appears all of a sudden on one of the extremities. The pain usually increases as it advances; at first, limited to the lower part of the leg, it gradually extends itself as far as the groin, and sometimes even to the hips.

Occasionally, also, the affection does not manifest itself in the thigh, while it becomes seated in the two opposite extremities of the limb, the lower portion of the leg, and the fold of the groin.

Sometimes the disease appears under the form of a simple stiffness, a species of cramp; at other times there are lancinating

pains, excessively distressing, which draw shrieks from the patient. This pain follows exactly the course of the vessels, which assume the appearance of a knotted cord, very painful on pressure. The temperature of the limb is increased.

The termination of this malady is ordinarily favourable. It has however, sometimes proved fatal.

The resolution of this engorgement is sometimes accompanied with an enlargement of the superficial veins of the affected limb.

This affection may also terminate favourably after the formation of purulent collections in different points of the extremity.

The fatal termination may be occasioned by numerous abscesses, by purulent absorption, or by gangrene.

Treatment.—General bleeding, proportioned to the intensity of the symptoms and to the strength of the patient; application of leeches to the groins, repeated as long as the pain shall continue; cataplasms.

Emollient drinks, mild purgatives; if the pain be very acute, anodynes may be employed. If the swelling should continue after the cessation of the inflammatory symptoms, we must resort to compression, by means of a roller bandage moistened with discutient lotions; alkaline baths, mercurial frictions, calomel internally combined with digitalis.

§ 11. *Febrile Excitement, depending on the Condition of the Genital Organs.*

Before completing this brief sketch of the diseases incident to the parturient woman, there is one circumstance to which it will be useful to call the attention of young practitioners.

At the moment of delivery, the external genital organs may, notwithstanding every care, be contused and lacerated. These lesions often induce a febrile action, the cause of which will more likely be unknown in proportion as the patient does not experience pain in these parts, and does not, therefore, direct the attention of the accoucheur to them. Thus, whenever there shall be fever, without manifest cause, these organs should be examined, in order, if necessary, that appropriate treatment may be employed. This treatment consists in separating the labia from each other by means of a piece of lint saturated with marshmallow, and renewed several times during the day; frequent ablutions and injections; and, finally, the parts should be covered with a cataplasm, having its surface protected with gauze.

A few hours after the employment of these means the fever will disappear, and the organs heal rapidly.

age under these circumstances would almost certainly ensure the child's death, for the forced pressure employed could not but result prejudicially. I am well satisfied that the infant is often sacrificed by the long-continued pressure made on its head after the application of the instrument; and to avoid this, I always pursue the following method, which I am in the habit of recommending to my class, and to which I attach great value: As soon as the instrument is properly applied, and the patient has a labour-pain (for, as a general rule, the tractions are to be employed *only during the pains*), I then commence extracting, with the

CHAPTER II.

DISEASES OF NEW-BORN INFANTS.

Marks.

THESE consist of certain spots, of a brown, yellow, red, blue, or black colour, which are observed on the skin, and which, resembling in appearance certain objects or fruits, have induced the opinion to prevail that they are the effect of various impressions experienced by the mother during pregnancy; they are of variable extent and form. They are the result of an alteration of a portion of the skin, and of a disease which has its seat in the mucous body of the integument, or in the rete-mucosum. They remain stationary after birth, assume nothing of a morbid character, and do not require any treatment, which, on the contrary, would prove injurious.

Fungus Hæmatodes.

Such, however, is not the case with certain vascular spots, reddish, more or less prominent, flattened, pediculated, which, being occasioned by an aneurismal dilatation of the small sub-cutaneous vessels, may, after birth, become the seat of a congestion, and of a forced nutrition; they may thus enlarge, ulcerate, and give rise to fatal hemorrhages. The treatment which has been recommended consists in cold and astringent applications, compression, extirpation by means of a cutting instrument, or by ligature, or placing a ligature around the principal artery which supplies the varicose vessels.

Ecchymoses and Bruises.

Most of the ecchymoses and bruises observed on the body of the new-born infant are unimportant, and result most generally from pressure experienced during a difficult labour, or from the necessary obstetric manipulations. In the rest, the resolution of these ecchymoses almost uniformly takes place spontaneously, and requires to be facilitated by some discutient applications only in case the integuments should become too much swelled. It should, however, be remembered that the bruises may result in erysipelatos inflammation, and that, in this respect, they merit all the attention of the accoucheur.

Sanguineous Tumours.

Very frequently, the parts of the infant which remain the longest exposed to the hollow of the pelvis become the seat of a sero-sanguineous effusion, which shows itself more particularly on the cranium, face, breech, shoulder, or knees, and is formed either by

effused blood, or by a reddish serosity. The tumour may be diffused or circumscribed, hard, elastic, or soft, and fluctuating; ordinarily it disappears of itself, after a few days; but at other times, the effused fluid, instead of being absorbed, becomes converted into pus, and abscess, with excoriation of the subjacent parts, may ensue, which, however, most commonly only occurs on the cranium.

It is, therefore, much more important to study these sanguineous tumours on the head, where their greater frequency is explained by the presentations of the vertex. They present several varieties.

1st. The most simple and common variety consists in an effusion, more or less abundant, situated between the integuments of the cranium and the subjacent aponeurosis (the *caput succedaneum*, the external sanguineous tumour of the cranium); it is not dangerous, and subsides most frequently of itself, or under the influence of some discutient; it should not be opened with a bistoury, unless the collection of fluid is so abundant that it cannot be absorbed.

Cephalæmatome.

2d. Another important variety, described under the name of *cephalæmatome*, consists in a sanguineous effusion between the bones and pericranium. Here the tumour is less prominent, and more resisting than in the preceding case; the fluctuation is not so manifest, and if the finger be applied to the tumour, there will be a slight depression, which lasts for a greater or less time. During the first days after birth the tumour increases in elevation, fills, and becomes more distended; it then remains stationary for fifteen or twenty days, at the end of which its volume gradually diminishes; for ordinarily the cure is effected without the aid of art, and particularly when the sub-pericranial tissue itself is not raised, the absorption proceeds with facility. It is then observed that the tumour begins to make stronger resistance to pressure; the finger which compresses it feels a species of crackling, similar to that produced by dry parchment. In proportion as it becomes hard, it also becomes less elevated, flattens, and depresses towards its centre, and there is felt around it a hard and bony ridge. The *cephalæmatome* is only met with on the parietal bone, and oftener on the right than on the left (on account of the frequency of the first positions of the head), and sometimes, also, on both at the same time, but never on any other bone of the cranium. The base of the tumour does not cross the sutures, and the blood which it contains is extravasated between the pericranium and parietal bone itself. This effusion, commonly without danger, may also, although rarely, occasion necrosis or caries of the bone, which, as a consequence, affects the dura mater, and causes the death of the patient.

The principal cause of *cephalæmatome* differs from those of the preceding tumours, in the fact that the lateral and violent compression exerted by the walls of the pelvis on the integuments and bones of the cranium, after having produced an extreme overlap-

ping of the parietal bones, determines a fissure of thin substance, and, consequently, a more or less considerable effusion of liquids, formed also by the position of the parts exposed to the hollow of the pelvis.

We observed that the cure generally takes place without the assistance of the accoucheur. According to the researches of MM. Nægele and Valliex (*Clinique of the Diseases of New-Born Infants*, Paris, 1838, page 495), nature proceeds as follows in the removal of the disease :

1st. The detached pericranium ossifies on its internal surface ;

2d. In proportion as the extravasated blood is absorbed, the ossified pericranium approximates the bone, and becomes perfectly united to it ;

3d. After six months, and even a year, there is an eminence observed on the portion of the cranium, which constituted the seat of the tumour ;

4th. In children who die at the end of six months or a year, on making a section of the parietal bone, it will be found thicker at the point of the tumour than at any other portion of its extent.

It will be seen that these tumours, left to themselves, or assisted merely by some discutient applications, diminish, or disappear completely after the lapse of a few weeks. If, however, after twenty-five or thirty days, fluctuation was evident, and the tumour very soft ; and if, in addition, the child presented symptoms of cerebral disturbance, it would indicate that the absorption of the effused fluid could not take place, and that the disease had reached the bone, and penetrated even to the membranes of the brain. It would then become necessary to practise an incision on the tumour, in order to afford escape to the effused fluid, and avoid the consecutive accidents. The cephalæmatome has been observed to heal very kindly after the incision. But it is particularly on account of this small operation that it becomes necessary to distinguish accurately the sanguineous tumours of the cranium from the cephalæmatome. We shall see, farther on, what are the characters which accompany this latter affection.

5th. Finally, the third species of sanguineous tumour of the cranium is deeper, and has its seat in the diploe of the parietal bones, or between these bones and the dura mater. This, therefore, is more dangerous than the others, since it is nearer the surface of the brain. Resolution, however, may occur spontaneously without occasioning serious results. As must be at once evident, no special treatment can be resorted to.

Depression and Fracture of the Bones of the Cranium.

The depression of the frontal or parietal bone sometimes takes place in new-born infants, in consequence of a difficult and prolonged labour, which has required the use of the forceps ; or in consequence of the compression of the cranium against a too projecting sacro-vertebral prominence. This latter cause even seems to be more frequent than the former, and is more likely to occasion

fracture of the bones. The peculiar kidney shape of the pelvis, the too great resistance of the bony parts, the excessive size of the foetal head, will cause us to apprehend this lesion, the principal consequences of which are coma, convulsions, and often death, if there be effusion.

The depression usually has its seat in the frontal or parietal bones, and is recognised by a very sensible sinking in under the finger, broad, but not deep.

It may occur with or without fracture; in either case, the accidents are the same as those described above. These may also occur when the head has been obliged to traverse a narrow pelvis; and the bones having undergone considerable overlapping, without either depression or fracture, have remained, after birth, in the same situation.

The great compression exerted on the brain in pushing its fibres in a sense opposite to their direction, according to M. Radfort, and in oppressing the circulation of the longitudinal sinus, prevents the establishment of respiration and circulation in a regular manner, and produces sometimes a softening of the organ, and a sanguineous effusion, which may become fatal.

There is no particular remedy for these different lesions, which nature most usually cures herself. When, however, there appears to be effusion in the brain and difficulty in the circulation, we should hasten to cut the cord, in order that blood may flow from its open vessels.

Paralysis of the Facial Nerve.

It occasionally happens that the branches of the forceps, in consequence of the firm compression they exert on the lateral portions of the head, and on the origin of the facial nerve, occasion a momentary paralysis of a portion of the muscles of the face. When the child cries, the features become contracted only on one side, and remain immovable on the other, and the eyelid of the compressed side is perfectly passive. There is nothing alarming in these symptoms; after a few days the muscles regain their action and the features their mobility; if, however, this return to the normal state be too tardy, we may employ slight frictions on the facial nerve with a soft flannel and weak camphorated alcohol. I have often observed this affection after the application of the forceps. M. Landouzy also reports several cases of this kind, observed at La Clinique.

Diseases of the Skin in New-born Infants.

Among the principal diseases of the skin of new-born infants we may mention the following:

Erythema, which may be caused by any species of irritation applied to the skin, by the contact of faecal matter, &c. In general, the inflammation is very superficial, rarely accompanied with disturbance of the system, and which disappears readily with cleanliness and emollient lotions.

Erysipelas.—This is an affection which very frequently attacks new-born infants, which is explained by the habitual sanguineous congestion of their integuments. This eruption has its seat more commonly on the abdomen, thorax, and extremities, than on the face and head, and may terminate either by resolution, desquamation, or suppuration of the sub-cutaneous cellular tissue, and even by gangrene; it is much less frequently than in adults accompanied with gastric symptoms, but enteritis is not very unusual; finally, there is almost always acceleration of the pulse, heat and dryness of the skin, together with pain and insomnolence. Its duration varies from six to twelve days. The treatment consists in emollient applications, especially when the erysipelas has a tendency to become phlegmonous, and in local and cautious blood-letting if the inflammation should be severe; if not, diet and mild drinks will alone suffice. We must, in a word, combat the symptoms of gastro-enteritis, and remove the causes capable of producing or continuing the irritation of the skin.

The erysipelas, which develops itself around the umbilicus of new-born infants, and which is frequently produced by the irritation connected with the separation of the umbilical cord, requires precisely the same treatment.

Pemphigus.—This eruption is sometimes observed on different parts of the body of new-born infants, possessing the same characters as pemphigus of the adult; but M. P. Dubois thinks he has met with it in young infants who, presented also different symptoms of a syphilitic affection, and who were born of syphilitic parents. According, therefore, to this professor, it would seem that pemphigus in new-born infants is an indication of venereal disease, and that it requires a special treatment.

Variole.—Rare at birth. This affection, however, is observed occasionally on the body of the young infant who has been affected with it in its mother's womb, in consequence of the latter having the eruption. As singular as this fact may appear, it nevertheless has been observed several times by respectable practitioners, worthy of every confidence. Children, however, who have contracted this malady during intra-uterine life, have generally succumbed before their birth or a few days afterward.

Ichthyosis.—This is a congenital affection of the epidermis, which appears under the form of blotches slightly thickened, separated from each other by irregular lines. They are of a dull grayish colour, become detached, and leave under them a thick and rough epidermis. This disease, which may have its seat on one or all the parts of the body at the same time, frequently continues for several years, and cannot be confounded with the exfoliation of the epidermis which takes place during the first days after birth. The treatment consists in warm and emollient baths, gentle frictions with olive oil or the oil of sweet almonds, acidulated drinks, and especially personal cleanliness.

Syphilitic Vesicles.—When these vesicles are congenital, they are tense, filled with a greenish yellow or sanguineous matter; but

if they do not appear until after birth, they succeed inflamed spots; they are usually located on the feet, hands, heels, fingers, and toes. They are of a few days' duration, and are followed by crusts and ulcers, which continue for some time, and often occasion the death of the infant. *Pustules* of a syphilitic nature are also observed in new-born infants about the breech and genital organs; they become covered with crusts or scales, or are converted into ulcers, and these then present all the characters of the syphilitic chancre. It is, however, very difficult to distinguish these eruptions from others similar in appearance, but which are much more readily healed, and are not in any way dangerous. We must, therefore, examine with care whether the parents of the child are not affected with syphilis; and in this case, the mother must be subjected to a mercurial treatment, as the only means of relieving the infant; but should this latter not nurse, it will then be necessary to put in its milk the smallest quantity of the proto-iodide of mercury, or any other suitable mercurial preparation.

Gangrene of New-born Infants.

This species of gangrene is remarked, particularly soon after birth, in children whose circulation and respiration are imperfectly performed. Congestion takes place, a sanguineous fulness of the extremities, which, in consequence of the difficulty in the circulation, become bluish, cold, decomposed, and sphacelate; and then either an inflammatory circle limits the ravages of the disease, or death results. This gangrene usually commences on the toes or fingers; the skin becomes dark and tumefied, and is covered with sero-sanguineous bullæ, which excoriate; the integuments assume a brownish colour, become emphysematous, and emit a gangrenous odour, while the fœtus, pale, immovable, breathing with difficulty, with scarcely strength to utter a cry, gradually sinks, its body being emphysematous, and covered with scorbutic petechiæ. It is necessary in this disease, most generally rapidly fatal, to diminish the sanguineous plethora by the application of leeches to the anus, dry or aromatic frictions on the parts, in order to increase the activity of the circulation, and to dress the eschars or ulcers with the wine or decoction of quinine. These are the only means we can employ, for internal remedies are impracticable in infants so young, and whose digestive organs are so delicate.

Œdema, or Hardening of the Cellular Tissue in New-born Infants.

The hardening of the cellular tissue in new-born infants is nothing more than simple œdema, entirely analogous to what is observed in adults and old people; it is, in a word, an abundant infiltration of serum in the substance of the cellular tissue. This affection is characterized by a very great resistance of one or several portions of the surface of the body; the integuments appear to be hardened, swollen, tense, more or less red, and the impression made by the fingers continues for some time. The following have been considered as capable of producing this disease.

1st, Natural debility of the infant; 2d, a condition of general or congenital plethora; 3d, superabundance of venous blood in the tissues; 4th, dryness of the skin before the exfoliation of the epidermis; 5th, obstruction in the circulation, occasioned by the abundance of blood in the circulatory apparatus; 6th, its excess in the cellular tissue, to which it furnishes too many materials for secretion; 7th, the action of external agents on the skin, such as cold, which, by checking the cutaneous perspiration, will favour the accumulation of serum in the cellular tissue. The sanguineous engorgement of the liver, lungs, and heart, and the occlusion of the natural openings, are not exclusive causes of this malady, but are merely accompanying phenomena.

When the œdema is general, and the serous congestion is excessive, all the parts of the body in which there is cellular tissue experience a disturbance in their functions; thus, the glottis, having become œdematous, renders the cry of the infant painful, acute, and choked. The slowness in the circulation explains the coldness of the extremities and the prostration into which the patient falls.

The therapeutic indications consist in controlling the plethora by sanguineous evacuations, and exciting the skin by irritating frictions; wool, applied directly to the surface, is one of the best means of effecting this latter object.

The hardening of the adipose tissue takes place with or without general infiltration of the sub-cutaneous cellular tissue. The cheeks, breech, calves of the legs, and back, are its most ordinary seat. It may or may not be accompanied with disturbed circulation or respiration. The adipose tissue in this affection is very firm, and is like congealed tallow, which probably arises from the fact that the animal heat has left the body of the infant.

Jaundice of New-born Infants.

The icteric colour of the young infant is not always limited to the integuments alone; it may be partial or general. Thus, the brain, spinal marrow (and it is this condition which has been described by Lobstein under the name *kirrhonosis*), lungs, heart, intestinal tube, kidneys, liver, muscles, cellular and adipose tissue, have presented, either separately or simultaneously with the skin, the peculiar yellow colour of jaundice; but most commonly the skin is affected, either in part or in totality; and it is remarkable that the yellow tint almost uniformly succeeds the red colour exhibited by the skin of the new-born infant. It would, therefore, seem probable that jaundice, being local, does not depend on any general cause, such, for example, as disease of the liver, which, moreover, scarcely ever is met with at this tender age; and that the yellow hue is occasioned by the deposit of the serum of the blood, highly coloured, in certain organs, in which it finds itself placed under peculiar conditions. It should, however, be remarked that jaundice frequently coincides with a sanguineous congestion of the liver and integuments. In all cases this species of icterus is not a disease, and requires no particular treatment unless there

should be some complications, and nature generally removes the yellow colour in a short time.

Leucorrhœa.

Not unfrequently we observe in young infants a purulent discharge from the vulva, which is sometimes quite abundant. In general, it is a symptom of no importance, and will disappear in a few days spontaneously, or by simple cleanliness and emollient lotions. This discharge, however, will sometimes continue; in this case, we must employ astringents in the wash and in baths. It is not usually a symptom of syphilis, as was for a long time supposed, and it should not be ascribed to this disease except in cases in which other positive symptoms on the part of the mother would justify the opinion. The discharge, in a word, depends on an irritation of the genito-urinary mucous membrane, analogous to that of the conjunctiva in the ophthalmia of new-born infants.

Gangrene of the Vulva.

A disease of the genital organs, which is much more serious, and which merits all the attention of the accoucheur, is gangrene of the vulva. It coincides, almost always, with certain cutaneous phlegmasiæ, such as variola and rubeola; it is a very grave affection, and is always complicated with gastric or cerebral symptoms, more or less serious. The local treatment is the same as in other species of gangrene, and consists in applications of powdered quinine, compresses wet with the chloride of lime, &c., &c.

Swelling of the Breasts.

The breasts of new-born infants are sometimes the seat of a tumefaction, caused by the accumulation, in the gland itself, of a sero-lactescent fluid sometimes abundant, and which gives rise, in some rare cases, to inflammation and abscess of the mammæ. But this turgescence is most generally temporary, and without danger; however, it will be proper to cover the breasts with cataplasms, to prevent accidents.

Spotted Hemorrhagic Disease, and Hemorrhage of the Intestines.

I have classed these two diseases together, because they are almost always combined, and proceed from the same cause. They are observed in feeble children badly nourished, whose capillary circulation is disturbed; they present themselves under the form of spots of a deep red, circumscribed and rounded, and which appear on the surface of the body, and also in different points, and sometimes even along the whole length of the digestive tube. In this latter case, there is always hemorrhage of the gums, stomach, intestines, bladder, &c., &c. This affection, however, ordinarily without fever, is sometimes not accompanied with these alarming symptoms, and continues limited to the skin. It is, nevertheless, often fatal; and if we have the time, we should endeavour to remove the danger by applying, for example, one or two leeches to the breech in order to diminish the quantity of

blood, but only in cases in which we suspect that the disease arises from evident sanguineous congestion ; for if the disease be simple, and the infant weak, we should confide the cure to nature.

Hemorrhage from the Umbilicus.

This may occur in an infant as soon as it is born, either in consequence of not putting a ligature around the cord, or because the ligature has become loose, or because violent tractions have torn the cord from near the umbilicus. This is somewhat serious, and requires to be remedied immediately, either by a ligature or compression, which may be employed by placing above the wound lint, and graduated compresses, supported by a bandage.

Purulent Ophthalmia of New-born Infants.

The impression of cold air, the confinement of a number of children in a badly-ventilated apartment, neglect of cleanliness, protracted and difficult labour, as also the compression of the head of the infant, the epidemic influence so manifest in hospitals, and, finally, syphilitic blennorrhagia in the mother, are the principal causes of ophthalmia in new-born infants. This disease may declare itself on the second or third day after birth. At first, there is merely a slight redness and tumefaction of the eyelids, which, however, are very sensible on pressure. The child cannot endure the light, closes its eyes, and turns from it.

But if the irritation be left to itself, it soon passes to the second period. The redness, pain, and tumefaction increase in intensity, and suppuration is established. The conjunctiva of the ball of the eye becomes inflamed, tumefies, is covered with granulations, and the folds which it forms give rise to an ectropium more or less marked, when the child cries. The suppuration, which becomes more and more abundant, varies in colour from a yellowish white to a green, and is sometimes mixed with blood. When the inflammation has extended over the globe of the eye, it occasions lesions, which may, in fact, destroy the whole organ. The most common is inflammation of the cornea, which may cause, 1st, opacity of this membrane, which usually subsides after the inflammation has yielded ; 2d, the softening of the cornea, much more serious and frequent. The cornea loses its polish, commonly towards the centre, presents in a given point a grayish and slightly brown tint, becomes perforated, and allows the aqueous humour, crystalline lens, and also the vitreous humour to escape. The eye is then sunken, and vision is lost. 3d. Ulceration, which usually occurs on a level with the opaque portions of the cornea, and presents tumefied borders, somewhat prominent and regular. It results in the same accidents.

The prognosis of ophthalmia, therefore, is the more alarming as the inflammation extends more towards the globe of the eye, involving more or less of its structures. In its simple state it lasts only a few days ; when the disease is more profound, its duration is very long. In the first period of ophthalmia, the milk of the nurse, instilled between the eyelids of the infant, will alone suffice. But when suppuration has become established the first thing to do in the treatment of this

disease is to combat the inflammation, if it be violent, by the application of leeches to the external angle of each eye; but it is rare that we are obliged to have recourse to this alternative; lotions with marsh-mallow-water and rose-water will most generally suffice. We should also use a collyrium composed of the nitrate of silver (two to five grains to the ounce of water); this is the most efficacious remedy to remove the inflammation, and oppose its melancholy results. Several drops of this collyrium should be placed between the eyelids two or three times a day. Finally, it is indispensable to keep the light from the child's eyes, especially in serious ophthalmia, by placing a veil over its face, turning it on the side opposite to the light, and surrounding its cradle with thick green curtains.

A lady living in my neighbourhood brought to M. P. Dubois her infant, affected with purulent ophthalmia, and for which the only application had been marshmallow-water. One eye was entirely destroyed. M. Dubois requested me to take charge of this child, and with the collyrium of the nitrate of silver I was fortunate enough to save the other eye.

In general, sufficient attention is not paid in the city to this affection, which, if left to itself, may often result in the most distressing consequences.

Stomatitis with altered Secretion—Sprue.

This affection is characterized by the concretion of mucus on the surface of the inflamed mucous membranes, whether these membranes have an epithelium or not. This concretion may be observed in the mouth, œsophagus, stomach, small and large intestines. We shall here speak of it only when attacking the mouth.

The sprue presents itself under three forms: 1st, under the form of very small white points, scattered over the tongue and the walls of the mouth; 2d, it shows itself in layers of more or less extent; 3d, under the form of a membrane, which covers the whole tongue, or extends on other portions of the buccal cavity.

This excretion is usually preceded by an erythematous inflammation of the same parts, succeeded by small white points, which always have their seat on the surface of the epithelium. These white points soon unite under the form of a membrane, which gradually exfoliates, to become again reproduced. The sprue, when composed of these white points, usually occupies the extremity of the tongue; when in patches, the internal surface of the lips and cheeks; and in a membranous form, it is found at the base of the tongue, and on the velum palati.

The presumed causes of sprue are early infancy, improper nourishment, the accumulation of a number of children in the same apartment, the peculiar constitution of each individual, which predisposes it to inflammation of the mucous membrane, debility, quality of the nurse's milk, and the repeated efforts at nursing which the child is occasionally obliged to make. This disease is not considered contagious; and in very young infants it is not accompanied with much fever: the skin is warm and dry, thirst ardent; but it is often complicated with in-

flammation of the digestive apparatus, and this circumstance renders sprue so often fatal.

Treatment.—When sprue is simple, we should content ourselves with washing the mouth of the infant several times during the day with a camel's hair pencil, wet with the water of marshmallows and honey with rose leaves, to which may afterward be added a little borax or alum. If the disease be complicated with inflammation of the digestive tube, or of some other important organ, the inflammation must be combated by appropriate treatment. The air should be changed, the diet confined, and every cause capable of continuing the disease removed.

Follicular Stomatitis, or Aphthæ.

Aphthæ are nothing else than an inflammation of the muciparous follicles of the mucous membrane, whether of the mouth, or of any other portion of the digestive tube.

The mucous follicles, at first engorged and inflamed, soon afford escape to a whitish matter through a laceration of their central point, which promptly ulcerates. The small superficial ulcerations sometimes have rounded borders, and secrete a pultaceous whitish matter, which becomes detached.

The aphthæ most generally occupy the internal surface of the lips, cheeks, the upper portion of the gums, the frenum, and sides of the tongue. If they should be numerous and close together, their borders become confounded, and the matter forms a more or less broad layer, somewhat analogous to that of the sprue, which, however, may be distinguished by remembering the development of the inflamed follicles, and of their solutions of continuity, which do not exist in sprue.

Aphthæ are remarked particularly in debilitated children, pale, lymphatic, badly nourished, and breathing an impure air.

The general symptoms are of no account; the skin is warm and dry, and fever is observed only in children somewhat advanced in age. But, if the aphthæ should be numerous, and extend along the œsophagus and the rest of the digestive tube, which most frequently is the case, the child grows pale and emaciated, is seized with vomiting and diarrhœa, and, finally, with all the symptoms of gastroenteritis.

The treatment is the same as has been recommended in sprue.

Two other species of stomatitis may affect the young infant the ulcerative and gangrenous. We shall not describe them here for they are ordinarily observed at a later period.

Principal Symptoms of the Diseases of the Digestive Organs in New-born Infants.

Vomiting.—Vomiting, or, rather, the regurgitation of a portion of the milk, is, in general, of not much moment; the stomach rejects it because it is too much distended. But when the vomiting causes the whole of the food to be thrown off, it will soon result in the destruction of the infant; it may depend on improper nourish-

ment, on œsophagitis, gastritis, enteritis, particularly about the ileo-cæcal region, on an obstruction to the course of the fæcal matter, and on softening of the mucous membrane; and it requires the treatment appropriate to these different maladies, when they are well characterized; but, most generally, the alteration alone of the diet, the use of a little magnesia, or of a slight laxative, will be all that is required.

Diarrhœa.—It is not a constant sign of enteritis; it may be produced by a veritable intestinal indigestion, improper diet, milk which is too old, gestation or the affections of the nurse herself, too precipitate weaning and premature use of solid food, irritation and an increased secretion of the follicular structure, and, finally, by colitis or enteritis. It varies in colour and in the consistence of the matter discharged: the yellow diarrhœa, frothy and fluid, is very often accompanied with inflammation; the white and mucous diarrhœa is mostly produced by an increased secretion of the muciparous follicles; but, in general, the green evacuations are regarded as signs of gastro-intestinal inflammation. This symptom is almost always accompanied with red spots about the anus, whether there be inflammation of the intestines or not. The sirup of gum, emollient cataplasms lubricated with oil, injections of mallows, orange-water, and baths, will suffice in most cases to subdue the diarrhœa. If the signs of intestinal irritation be very marked, and resist these means, we must apply a leech to the stomach or anus, according to the indication. In chronic diarrhœa, on the contrary, which is accompanied by hectic fever, and which soon destroys the infant, it often becomes proper to employ tonics and astringents; but what we must particularly attend to is the removal of the causes of the disease, by changing the situation of the child, giving it a more suitable nourishment, &c., &c.

Colic.—This is produced by the same causes as diarrhœa, and may be spasmodic, or may depend on inflammation, intestinal invagination, imperforate anus, gaseous distension during inflammation, or the sojourn of the food in the intestines without being digested. *Colic* will be recognised by the cries and agitation of the infant, and by its various contortions, in proportion as the pain increases, and, finally, by the evacuation of the matter of diarrhœa. It calls for the same treatment as this latter disease.

Tension of the Abdomen.—This frequently occurs in enteritis, and is then accompanied by pains in the abdomen, and is continuous, which distinguishes it from the passing distension of the intestines by gas, when they are in a state of spasm, a condition which is soon relieved when the gas escapes.

Eructations are rarely serious; they often depend on the frequent repietion of the stomach with food, and indicate a bad digestion when abundant and repeated. It is a fact worthy of remark, that, in young infants, the diseases of the digestive tube are not accompanied by the same strongly-marked phenomena of reaction as in the adult. Thus, with them, fever is rare, and the pulse, in most cases, becomes weak; the heat of the skin alone is increased. This

remark is the more important, as the digestive tube is the seat of most of the diseases that prove fatal at this tender age.

Congenital Herniæ of the Abdomen.

These herniæ may take place either through the natural openings, or through the spaces formed by the imperfection of the abdominal walls.

Umbilical Hernia.—This may occur at the moment of delivery or shortly afterward, and arises from the fact that the aponeurotic ring, which is intended to circumscribe and bind the base of the umbilical cord, is either too relaxed, or does not exist. Then, one or more folds of the intestines pass into the species of expansion formed by the umbilical cord at its insertion, and give rise to a hernia, the coverings of which are composed of integuments, cellular tissue, and peritoneum. Two methods have been recommended to relieve this hernia.

The *ligature* of Desault, which consisted in returning the intestine, and seizing the integuments near the abdomen (a method abandoned on account of its failures), and *compression*, which is performed by applying to the umbilicus graduated compresses, which are supported by means of a body bandage during the first few days, and which is afterward replaced by an appropriate bandage; this will usually prove sufficient to effect a cure.

Congenital Inguinal Hernia.—When the testicles descend into the scrotum, in the infant near term or after birth, they bring with them a portion of the peritoneum, in the form of a cul-de-sac, the abdominal opening of which becomes soon obliterated on a level with the ring; if this obliteration should not take place, the portion of intestine may, simultaneously with the testicle, or at a later period, and in consequence of the efforts of the infant, descend into the scrotum, and form an inguinal hernia. It is very important not to confound the testicle, which sometimes does not descend until after birth, and which then would be placed at the inguinal ring, with the portions of protruded intestine; and we should be accurately informed of the nature, volume, and presence of both one and the other.

When we have ascertained that an intestinal fold, or a portion of the epiploon has passed into the scrotum, we should endeavour to return them by making gentle pressure through the inguinal ring; then, in very young infants, we should apply a temporary bandage, with compresses, which should be changed frequently, in order to prevent irritation of the skin; and, finally, a permanent bandage should be used as soon as the age and cleanliness of the child will permit.

Compression should be made particularly over the opening of the inguinal ring; it will sometimes occasion the adhesion of the peritoneal layers, and the reclusion of the ring itself.

In little girls, very rarely, it is true, the hernia through the inguinal ring is composed of one of the ovaries.

Congenital Hydrocele.—The non-obliteration of the peritoneal

sac, which descends with the testicle, may occasion the accumulation of a certain quantity of serum in this sac, which may be recognised by its regularly rounded form, by the transparency observed through the coats of the testicle, and particularly by the facility with which this fluid is returned to the abdomen, signs which will prevent our confounding this affection with hernia. The treatment consists in pushing the fluid into the abdomen, and in compression on the opening of the ring for some time; or, according to Desault, the ring should be compressed, then puncture and injection practised after the ordinary method.

Prolapsus of the Rectum.

The efforts which the child makes when it cries, or breathes with difficulty, constipation, copious and hard evacuations rendered all of a sudden; finally, the frequency of alvine discharges, whether occasioned by a purgative or not, all tend to cause the protrusion of the inferior extremity of the rectum, the internal membrane of which, but slightly adhering to the two others by a loose cellular tissue, gradually becomes detached and extends beyond the anus. In the first place, we must endeavour to return the protruded membrane with the fingers smeared with butter or cerate; then the part reduced is to be kept in place with compresses saturated with cold water, and a T bandage. If the infirmity should continue, we will be obliged to use the precaution of supporting the edges of the anus whenever the child has an evacuation, and apply from time to time to the part lotions with a solution of sulphate of zinc or alum, lime-water, astringents, and tonics, which, however, must be aided by the application of a bandage.

Principal Deformities in New-born Infants.

Absence of the Skin.—The skin may be wanting on one or more parts of the body; but its absence is almost always simultaneous with that of the part it covers. This monstrosity is referred to two causes: either the skin has originally existed, and has become destroyed by a disorganization common in spina bifida; or it has never existed, because the parts for which it should serve as a covering have been arrested in their development.

Excrescences.—The tegumentary covering may, on the contrary sometimes present excrescences, particularly on the face, trunk, and extremities; it will be proper, when they are too prominent, to remove them early. This is not the place to enter fully into all the deformities which the skin may affect.

Asomia, or Absence of the Mouth.—This deformity occurs when the bones of the face have been arrested in their growth, and especially when the inferior maxillary bone is wanting. The infant cannot survive with this irremediable defect, and soon sinks.

Atresia, or Obliteration of the Mouth.—The adhesion of the lips, or the absence of the anterior opening of the mouth, is very rare; the treatment consists in making an incision of sufficient size on

the point to which the mouth should correspond, and preventing the cicatrization of the borders of the wound.

Hare-Lip.—The two lips, and more especially the upper, sometimes present in the new-born infant congenital divisions, situated either in the middle or lateral portions of the raphe. This deformity may consist in a partial division, a complete division, or in the absence of a considerable portion of the lip and superior alveolar arcade. When the division of the lip is simple, it is almost always situated on the side of the raphe; if it be double, it exists on each side, and then the wings of the nose are drawn more or less outward. Very frequently, it is accompanied with the division of the alveolar border, either of one or of both sides, ordinarily between the second incisor and canine.

Division of the Palate.—The palatine arch and the velum palati may also present a separation more or less considerable in the median line. These deformities, which are produced, according to some physiologists, by an arrest in the growth of the parts, require surgical operations, for the hare-lip interferes with suction and the taking the breast, while the division of the velum palati renders deglutition very difficult, and even dangerous. The operation, however, for hare-lip, or staphyloraphy, should not be performed until the child is some months old; and it should be nourished up to this time by giving it the breast, or allowing it to drink from a spoon or a biberon, holding it in a vertical position, particularly if the child have a division of the velum palati.

Tongue-tie.—The length of the frenum of the tongue, commonly called tongue-tie, limits the movements of this organ, and prevents suction. We should, therefore, in this case, raise the tongue and cut the frenum with a pair of scissors, being careful not to prolong the incision too much, and directing the point of the scissors downward, keeping them as far as possible from the base of the tongue, in order to avoid cutting the veins. I prefer commonly making a very slight section of the frenum of the tongue, and I then put the child immediately to the breast. The efforts of suction complete the freedom of this organ. I employ the middle and index fingers of the left hand, with the pulp of which I raise the tongue. If the hemorrhage, which sometimes occurs after the division of the vessels, become alarming, we use either the nitrate of silver or actual cautery.

Imperforate Anus.—The inferior extremity of the intestine may present a complete obliteration, which results from the imperforation of the skin over the centre of the anus, and then the rectum terminates in a cul-de-sac at its inferior part, or a portion or the whole of this intestine is wanting. In the first case, it contracts adhesions with the sacrum; in the second, it is the inferior extremity of the colon, which forms a cul-de-sac, and adheres to the sacrum near the vertebral prominence. It must not, however, be supposed that imperforation of the anus always accompanies imperforation or absence of the rectum. This orifice occasionally exists in children whose rectum is obliterated. This is a circum-

stance to which great attention should be paid when we are examining the signs of retention of the fæces. In the case in which the rectum exists and the anus is imperforate, it will suffice, in order to afford escape to the meconium, to make a puncture with a straight bistoury in the point at which the anus should be found, and in the summit of the small tumour, which distends at each effort made by the infant. The closure of the external wound should be prevented by the introduction of meshes of lint.

But when the rectum is obliterated in great portion of its extent, the operation, very difficult and dangerous, is rarely successful. We have to choose between the formation of an artificial anus on the anterior part of the abdomen, or at the point in which the anus should have existed. The first operation is easier, but the disgusting infirmity it occasions should cause us to prefer the method of M. Amussat. I once carried to M. Amussat a young infant with this imperforation, and this skilful surgeon performed one of those bold operations which, in my opinion, should alone be attempted in similar cases. It consisted in forming an artificial anus in the place at which the natural orifice should have been originally situated. For this purpose, after having dissected the parts as far as the intestine, he drew this towards him, opened, and attached it around the anal orifice by means of sutures. M. Amussat had already succeeded in the operation, but the infant of which I speak died. It will be at once seen, notwithstanding its dangers, how preferable this operation is to the establishment of an artificial anus, which consigns the unfortunate patient to a miserable existence.

Opening of the Foramen Ovale.—The opening of the inter-auricular orifice of the heart and ductus arteriosus does not occasion any particular accidents during the first few days after birth, because the quality of the blood at this period is in relation with the wants of the organs; but if there be at the same time sanguineous plethora, this malformation, joined to the impossibility or extreme difficulty of establishing respiration, produces sometimes cyanosis, for the want of the proper oxygenation of the blood. This latter circumstance, however, may also occur without the opening of the foramen ovale, when the blood, passing through the lungs, does not undergo the necessary vital modifications. In the uncertainty, therefore, in which we may be placed as to the cause of cyanosis, we must proceed as if it depended on a sanguineous congestion towards the heart and lungs. The infant should be kept near a bright fire, and its head and whole body gently rubbed with warm linen.

Deformity of the Spinal Marrow.

Complete absence of the spinal marrow always coincides with that of the brain. In the case of acephalous children, the spinal marrow is suddenly interrupted at about the fourth vertebra. The anular protuberance still exists, so that the heart and lungs, which receive nerves from the superior portion of the spine, may perform their functions for some hours.

Hydrorachie consists of one or more tumours situated along the vertebral column, opposite the separation of the spinous apophyses, and results from an accumulation of serosity contained in a sac formed by the skin and membranes. The tumour, oblong, soft, and disappearing on pressure, may be situated in different points of the vertebral column. Sometimes the skin which covers it is unbroken, and it can be distinguished only by the fluctuation and the feeling of separation of the vertebræ: children may then live a long time with it. Sometimes the skin is very thin, transparent, marbled, and soon ulcerates, and affords escape to the fluid; sometimes, on the contrary, the tumour is open, the borders are ulcerated, fungous, hard, and applied against the borders of the vertebral bifurcation, and the effused fluid escapes in variable quantity. These two latter varieties are more common than the former. In these cases, the inflammation of the membranes takes place promptly, and causes death. Thus, the symptoms of spina bifida are ordinarily unimportant as long as the tumour has no communication with the air, and does not exert excessive pressure on the spinal marrow and brain. We must, therefore, be careful not to open it, and content ourselves with exerting a gentle and gradual pressure on it.

Deformities of the Cranium and Brain.

Complete absence of the brain is met with only when the head, face, and superior part of the neck are wanting at the same time.

Anencephalie consists in the absence of a portion of the brain, with or without absence of the cranial cavity. It presents several degrees: either the cerebral hemispheres are in a state of dropsy, or the cerebellum and optic couches alone exist, or, what is still more common, the cranium and brain are wanting at the same time, and the forehead terminates on a level with the orbital borders, giving to the head of the infant the appearance of that of an animal.

Congenital Hydrocephalus is most usually distinguished by a considerable enlargement of the cerebral mass and cranial bones, caused, undoubtedly, by inflammation of the membranes, a very abundant secretion of serum either within or without the ventricles, or a species of nutritive hypertrophy. Hydrocephalus frequently coexists with hydrorachitis. The infant then presents one or more tumours along the vertebral column, with a very large head. The disease does not give rise to any morbid symptom; when it is not considerable, it sometimes remains stationary until rather an advanced period of life, and produces in the infant singular activity in the intellectual organs; but if, in extensive hydrocephalus, the disease increases, this activity is replaced by a destruction of the cerebral organ, and death soon follows.

Mercurial frictions have been recommended in hydrocephalus, but they are only useful when symptoms of acute or chronic meningitis declare themselves. It would be proper, also, to employ baths, derivatives on the digestive tube, revulsives to the extremi-

ties, diuretics, &c., &c. Stationary hydrocephalus demands only hygienic attention, and particularly removal from all mental excitement.

Encephalocele.—There occasionally exist between the bones of the cranium intervals more or less considerable, caused either by an arrest of development or by an excessive size of brain, as in hydrocephalus, preventing their approximation. This organ is then seen to form a real hernia through the separated fontanelles. The character of the tumour is recognised by its softness, by its being smaller than that of cephalæmatome, by the general form of the cranium, the separation of its bones, and particularly the situation of the hernia, which always occupies a point corresponding with one of the fontanelles, principally the anterior and superior. This diagnosis is important, in order not to confound the disease with a sanguineous tumour of the cranium, into which we might be tempted to plunge a bistoury, which must be guarded against in this case; the compression even would be injurious, and we should content ourselves with simply covering the tumour, and protecting it against external violence. This malady almost always coexists with hydrocephalus, and occasions, sooner or later the death of the infant.

I N D E X.

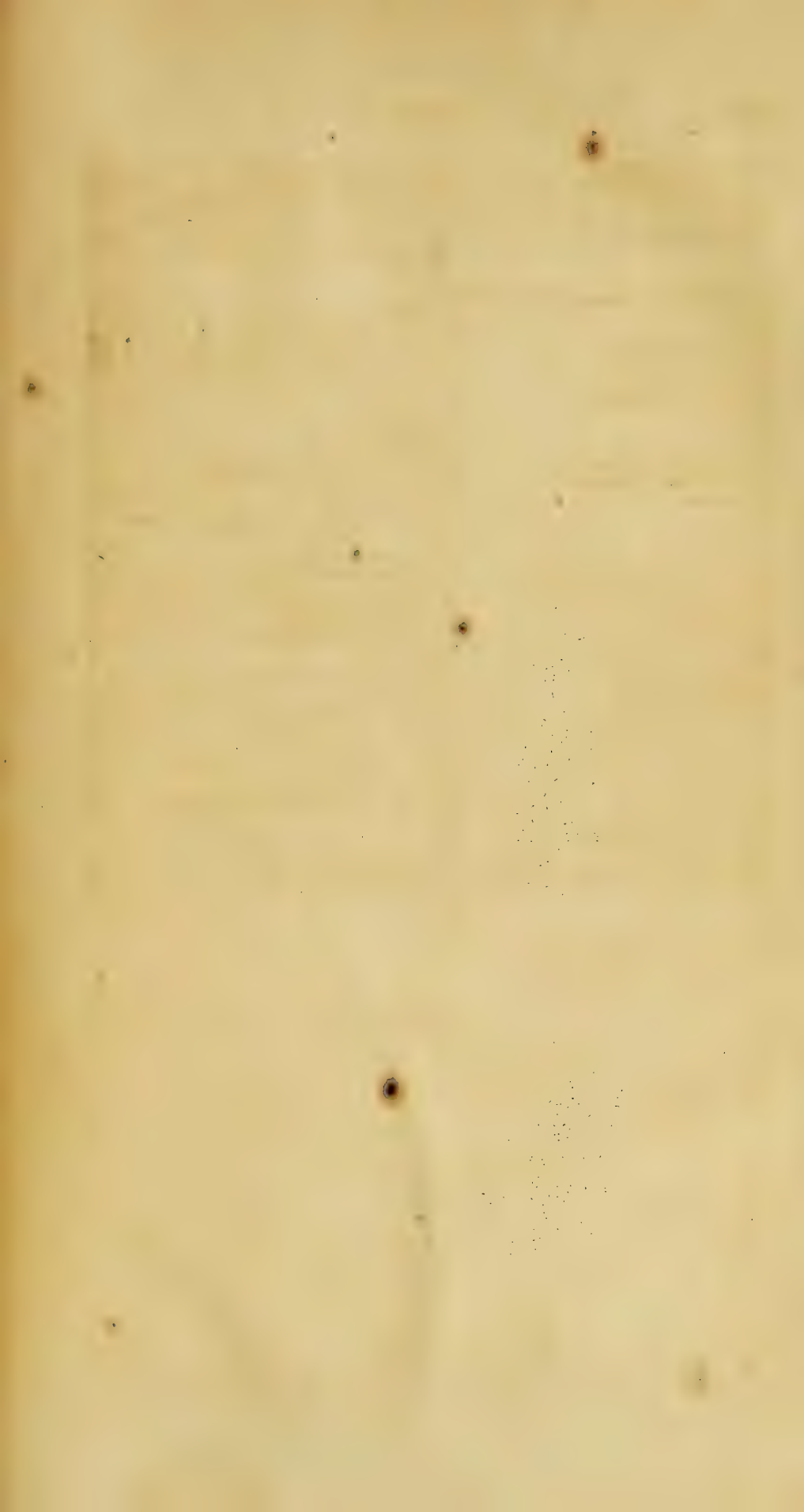
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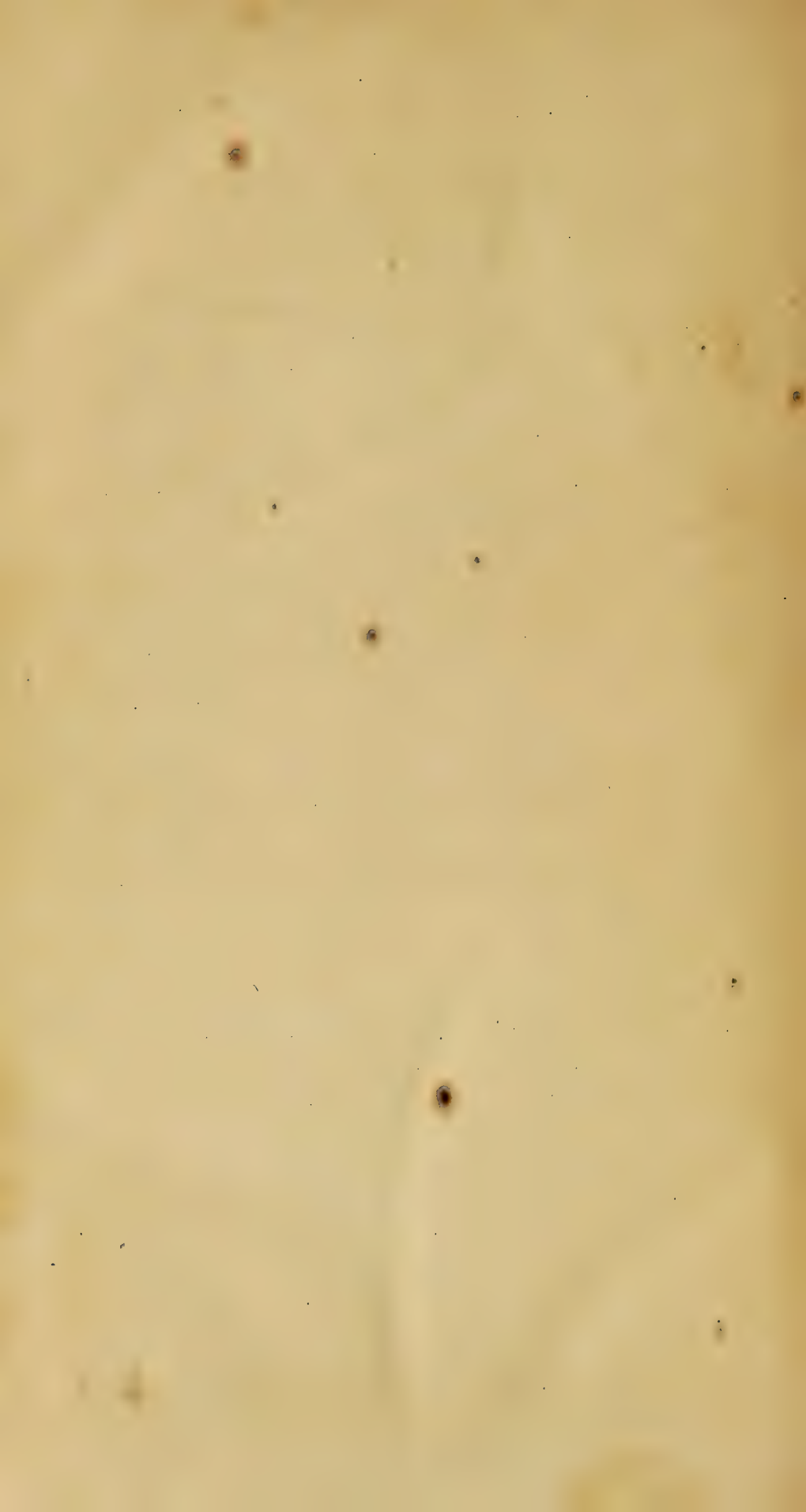
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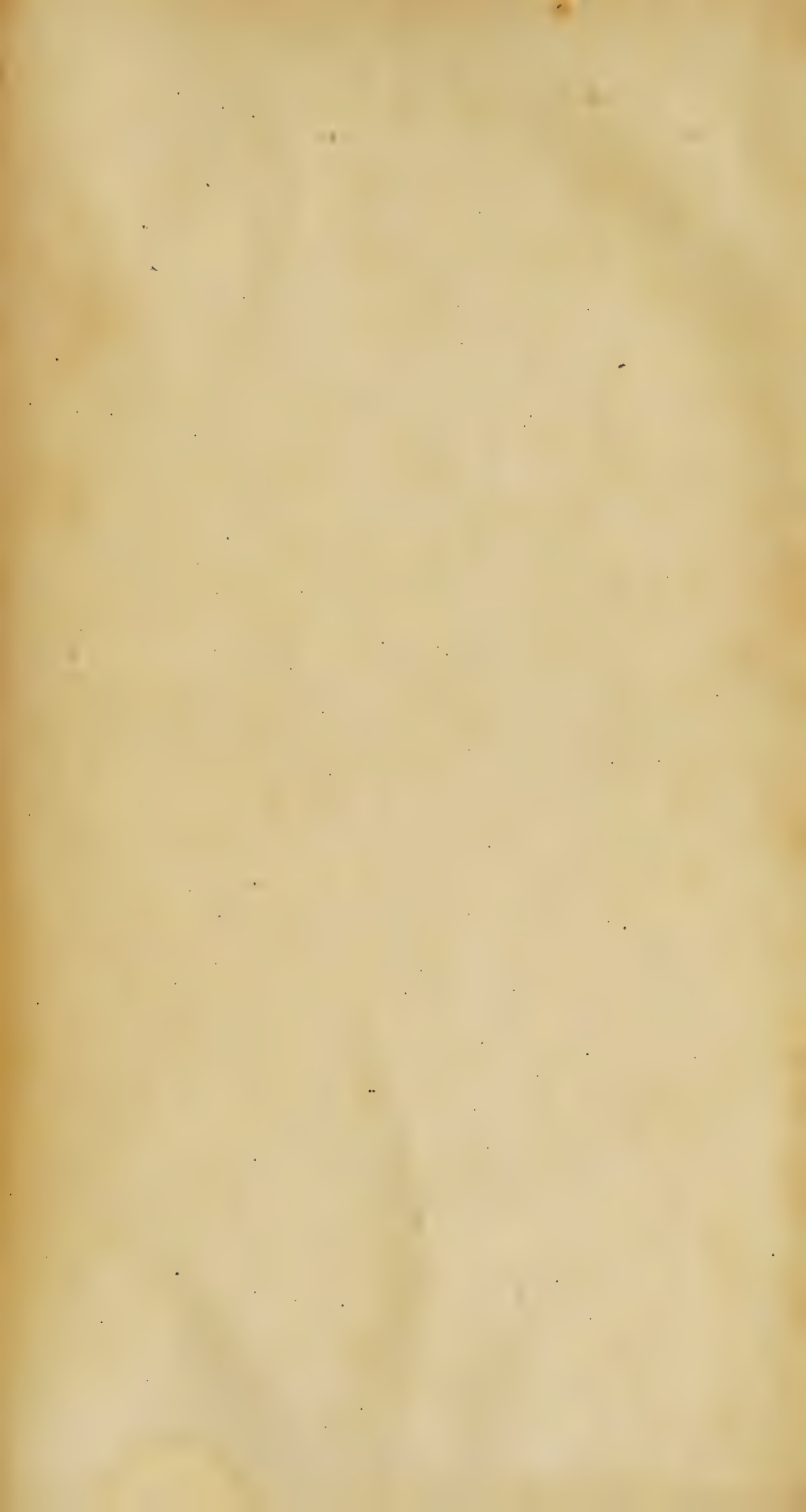
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THE END.









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